# STEEL

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STEEL
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# The Week in Perspective

A YEAR ago last Friday, President Roosevelt placed his signature upon the national industrial recovery bill. Three days later, STEEL commented upon the collective bargaining clause of the act as follows:

> " . . . The President, as its administrator, could, if he chose to do so, make it extremely difficult for employers to maintain the open shop principle. . . . Arbitrary supervision could easily lead to chaos, whereas an intelligent administration might pave the way for mutually beneficial improvements in the partnership of employer and employed."

In view of the fact that Section 7a has been administrated arbitrarily, it is not surprising that the first anniversary of NIRA finds the government working feverishly to avert the chaos of a strike.

## Current Need for Strategy in Public Relations Shows Institute's Preparedness

How clearly the experience of this labor mess emphasizes the wisdom of the American Iron and Steel institute in devoting more attention to public relations! Public opinion is based upon impressions gained from information that is readily available. In this crisis the institute, in distributing its pamphlet "Collective Bargaining in the Steel Industry" and in releasing information on the employes' vote against the strike, figures on wage payments, etc., has contributed to a better public understanding of industry's stand in the controversy. Proof of this is found in the more favorable editorials of some newspapers, whose earlier comments had reflected a knowledge of the labor problem highly colored by professional union propaganda.

## Maintaining the Balance Between Forces of Right and Left Grows More Difficult

The National Industrial Conference board's statement that in 1930, 1931 and 1932 business incurred losses of 71 billion dollars due to the depression while employes lost 37 billions (p. 21) proves clearly that industry strived harder than in any previous depression to lighten the blow upon wage earners. The billions voluntarily sacrificed by investors to sustain employment and payrolls will exceed by a great margin the results of the government's attempt to "redistribute" capital. But the investors never will receive public credit for their acts. Good politics deems it necessary to flay industry and to delude the public into thinking government deserves the thanks. Thus do political consideration exert pressure for radical measures, and make it increasingly difficult for the national administration to maintain a balance between the forces of right and left.

## Do Signs of Times Point to Low Prices and Efficient Operations as Keys to Recovery?

Now may be the time for industry to give serious thought to long range price trends. Automobile manufacturers have just demonstrated the potency of price reductions in stimulating orders. NRA shows a disposition to remove part of its support for price control by code authorities. In the early future the influence of foreign production of goods under the forced efficiency of dictatorships will challenge the price of American products. Does not the handwriting point to low prices—and therefore to efficient operations—as the price of business volume? Perhaps this thought motivated the purchase (p. 17) of a new continuous strip mill by a Valley steelmaker. If studies of current developments show that recovery lies in a return to low prices, as in 1896, rather than to the high levels of 1926, the purchase of cost-reducing equipment will increase rapidly.

## Constant Changes in Design and Practice Challenge Ingenuity of Industry

Introduction of "knee-action" spring suspensions (p. 31) in American automobiles involved drastic changes in the specification and processing of steel. Likewise, the demands for the recently improved tool steels has imposed marked advances in melting, refining and finishing practice. A modern plant, on the site where Taylor and White conducted their famous experiments, is featured (p. 51) by high-frequency induction furnaces, electric annealing equipment and other improvements unknown to the pioneers. Sound absorbent tile, a recent development, (p. 34) affords a new outlet for steel. Treated ferromanganese (p. 40) lessens the "gassing" of welding rods.

# Steel Strike Is Postponed; Labor Board Being Weighed

*PITTSBURGH, Friday Night*: THE strike of steel workers threatened for Saturday, June 16, by the Amalgamated Association of Iron, Steel and Tin Workers was postponed late today when the convention of the association instructed local lodges not to act.

Whether the strike is actually averted—and as a rule a delayed strike rarely eventuates—depended tonight upon the acceptance both by the Amalgamated and the steel industry of a 4-point program, based upon an industrial relations board, proposed today by William Green, president of American Federation of Labor.

In principle not unlike the board set up by the President for the automobile industry March 25, the board urged by Mr. Green differs widely in detail. It also is hedged about by provisions that may not prove acceptable to steel executives, who on June 8 approved a plan for a board as developed by NRA Administrator Johnson.

**Favors Majority Representation**

The Green board calls for majority representation, in keeping with the ideas of the national labor board, Senator Wagner and other labor-minded persons in Washington.

The automobile board, after which the steel board was supposed to be modeled, is predicated upon proportional representation, although no details were worked out after the Amalgamated early last week flatly rejected the Johnson board.

Appearing today before the Amalgamated convention, Mr. Green delivered what was tantamount to an ultimatum from the federation that the strike be called off.

"There is no group of employers more unfair than those that represent the steel industry," said Mr. Green. "I want to see the time come when your wrongs are righted, but I do not think that time is here now."

Immediately after Mr. Green's 4-point program, based upon a board, was laid before the convention, a committee of 16, of whom 10 were members of the radical "rank and file" group, went into executive session to consider it. George J. Williams was chairman of this committee.

The program the committee took under consideration was this:

(1) The board to receive, investigate and adjust complaints or violations of labor provisions of the steel code; to mediate in any employer-employe dispute; to arrange a conference for collective bargaining with any employer when so requested by employe representatives under section 7a of NIRA; to offer its services as arbitrator in any labor dispute, to hear and determine any matter of discrimination against or discharge of any employe in violation of section 7a.

(2) In order that employes may exercise the right of organization free of employer intimidation this board shall have authority to order and hold elections, and the representatives selected by a majority of employes to be recognized as representatives of the workers for the purposes of collective bargaining.

(3) All grievances regarding wages, hours and conditions of employment be settled through negotiations between the management and workers' representatives selected by the aforementioned manner. Any questions not so settled shall be referred by mutual agreement to the impartial board for final determination.

(4) In the event the aforementioned recommendations are accepted, the strike to be called off with the understanding that all questions in controversy are to be adjusted in the manner prescribed here.

**Company Heads Must Approve**

Assuming that the Amalgamated would accept substantially this program, it would have to go again before steel executives. The Johnson board, approved by Messrs. Grace, Irvin and L. E. Block for the steel industry June 8, specified a board on which employers, employes and the public would be represented, to be appointed by the President.

The board suggested by Mr. Green was described as an "impartial" board, also to be named by the President. On the makeup of the boards there apparently is no fundamental difference, but the four qualifying points might lead to adjustments.

It was a cooler, more conservative Amalgamated association before which Mr. Green spoke Friday. There was no hint of denouncing the administration. It was believed by some that Mr. Green was co-operating with the administration in trying to avert a steel strike which, if only partially effective, could have created considerable distress. The threat of a strike has paralyzed business in many steel-producing regions the past few weeks.

Action on the modified labor board bill was held up in Washington Friday pending the negotiations in Pittsburgh. The bill, empowering the President to create industrial boards for industries but minus the objectionable hobbles placed on company representation plans, was sub-

## What One Day's Halt of Steel Industry Would Cost

*IF THE production of steel ingots—the base of the steel industry—should stop for a day, the loss to the country in consumption of raw materials would be:*

125,481 *tons of iron ore*, 66,667 *tons of scrap*, 56,444 *tons of coke*, 41,509 *tons of limestone*, 30,000 *tons of coal*, 4000 *tons of raw dolomite*, 278 *tons of magnesite*, 222 *tons of fluorspar and* 31 *tons of aluminum. In addition, labor would lose* 536,666 *man-hours, or approximately* $348,883 *in wages.*

*This compilation is based upon a requirement of the following for the production of one ton of open-hearth steel:* 1792 *pounds of iron ore*, 1200 *pounds of scrap*, 806 *pounds of coke*, 683 *pounds of limestone*, 540 *pounds of coal*, 72 *pounds of raw dolomite*, 5 *pounds of magnesite*, 4 *pounds of flourspar and* ½ *pound of aluminum. And the following for the production of one ton of bessemer steel:* 4000 *pounds of iron ore*, 1800 *pounds of coke*, 550 *pounds of limestone and* ½ *pound of aluminum. Labor is estimated at* 4.14 *man-hours per ton of steel produced, this being direct labor only.*

*At the rate of steel production in May, almost* 3,500,000 *tons, the monthly requirements of the industry are:* 3,388,000 *tons of iron ore*, 1,800,000 *tons of scrap*, 1,524,000 *tons of coke*, 1,120,750 *tons of limestone*, 810,000 *tons of coal*, 108,000 *tons of raw dolomite*, 7500 *tons of magnesite*, 6000 *tons of fluorspar, and* 838 *tons of aluminum, and* 14,490,000 *man-hours which, figured at an average of* 65 *cents an hour, amounts to* $9,418,500.

*The actual loss in labor would be much larger, in as much as finishing mill labor is not included. In April, the last month for which American Iron and Steel institute figures are available, the total steel industry payroll was* $45,471,878, *and ingot production in that month was* 12 *per cent lower than in May.*

mitted to Republicans, who acquiesced in the measure provided it were limited to one year, or the remaining life of the recovery act.

To this, Democrats assented Friday, but whether the bill could be jammed through before the adjournment of congress was doubtful. As much as he desires a bill, the President said Friday he would not delay adjournment for it. However, a Democratic leader—Senator Robinson—said Friday afternoon some sort of bill would be passed before congress left.

Leading up to Friday's crisis was a week of wrangling such as has not marked any dispute since NRA last June began fomenting a labor class consciousness.

From the start irritated by the intransigent attitude of the Amalgamated, General Johnson became infuriated on Saturday, June 9, when labor leaders tentatively rejected his proposal to set up a steel labor board of three, which had been accepted by the industry.

Over the radio the general's vocabulary, already the pride and envy of Washington, reached blistering new heights when he fumed:

> "To paraphrase an Indian-fighting colonel of my early service, old Greaser Hughes, 'I have worn enough skin off the part of me that fits into a saddle, or used to, riding over the flats of Texas and the hills of Arizona, to make half a dozen critics such as they.' "

### Retaliate in Kind

Proving that an army general has no monopoly on hard language, the Amalgamated sent this rejoinder:

> "We, the undersigned steel workers, who have just listened to your refined speech, full of hell and bluster, denounce you for making such damnable statements over the radio, using your government position and the national radio to call us steel workers who criticize your schemes just so much skin off a saddle."

While the radical element of the Amalgamated, the rank and file group, was parrying Washington with one hand it was standing off conservative President Tighe with the other.

A week ago, Secretary of Labor Perkins and her American Federation of Labor assistant, Edward F. McGrady, patched up differences and welded Amalgamated radicals and conservatives into one group for purposes of negotiations.

But the weld did not hold after the group returned to Pittsburgh early in the week and began planning for the Thursday convention of 200 delegates from the various Amalgamated lodges. While the conservatives were mild in their comment on the President's abbreviated labor board bill, the radicals were unsparing in their denunciation of anything that failed to accord them outright recognition.

On Thursday, when the Pittsburgh convention voted 96 to 49 to open the Friday session to all members and not limit it to accredited delegates, rank and file committee leaders acclaimed it a test of strength and maintained that it foreshadowed a vote to strike unless recognized.

Even President Tighe was jockeyed toward the end of the week into opposing the revised labor bill, but his condemnation was mild compared with the intemperate language of rank and file leaders and he did an about-face after the address of Mr. Green.

Considering the pro-labor attitude of the administration over the past year, the policy of the Amalgamated has astounded Washington and driven government officials into the arms of the steel industry. It is industry, and not labor, that is co-operating with the government; it is labor, and not industry, that is attacking the government.

It is a strange language for General Johnson to employ but in answering an open letter of the Amalgamated to the President he said last week:

"The men who have been conferring in Washington on the labor situation in the steel industry announced in every meeting that they had no authority to negotiate any agreement or to approve any proposal. Certain local officials have signed an open letter to the President. It apparently does not bear the signature of any authorized official of the international union.

There was at no time any complaint to me of hours, wages or conditions of labor. There was no proposition for settlement of a threatened strike. There was only a demand that section 7a be enforced and that they see the President. There was not one single proposition for the President to pass upon, and hence no tenable ground on which I could ask the President to intervene. Nor has there been at any time in the past week any representation with which a settlement could be made.

"It became apparent beyond doubt in our hours of discussion that many of these men do not understand the law. My efforts were altogether confined to trying to explain to these men what they could do to obtain the benefits of the recovery act. They did not seem to be interested in having this done for them.

"The fact is that in few, if any, cases have representatives of this union prepared their cases in which they say that 7a has not been enforced in such a way as to enable the penal or injunctive provisions of the law to be invoked.

"I offered them every assistance of the government in obtaining their rights, but most of this particular group did not seem to be interested in so qualifying.

### Union Rejects Everything

The plan I presented to them was a revolutionary advance in the attitude of the steel industry. It offered a way to meet in substance every single demand I have heard in all these days of painful controversy.

The nub of the difficulty in union representation is establishing that union men have been freely chosen to represent workers. This plan proposed to solve that difficulty. These men rejected that.

The heart of the difficulty about a company union is the suspicion that men are not free in their choice of it. This plan offered a way to resolve that difficulty. These men rejected that.

The gravamen of complaints of intimidation is a claim that union men are discriminated against in layoffs. This plan offered a way to compose that. These men rejected that.

The difficulty in bringing prosecutions for violation of 7a is a presenta-

*THE AMALGAMATED'S "BRAIN TRUST:" Sen. Robert F. Wagner, of New York, author of the much-discussed and now-abandoned Wagner labor board bill, confers with officials of the Amalgamated Association of Iron, Steel and Tin Workers. Seated, left to right, are Edward W. Miller, vice president; Senator Wagner; Michael F. Tighe, president; and Louis Leonard, secretary-treasurer. Standing are other members of the Amalgamated, including the "rank and file" committee which has been harassing the conservative element in the Amalgamated*

tion of a case on which an indictment can be drawn to secure enforcement. These men presented no such case, and except for a few, did not seem to be interested in my offer to advise them as to how to secure their rights and vindicate their position.

They misconceive the rights and duties of this administration. It is an umpire and has no right to impose any particular form of labor organization on any industry or any group of workers. These men sponsor a policy which forbids any local from reaching an agreement with any employers until all locals agree with all employers. That is physically impossible—and yet that is one of the points upon which a strike is threatened.

When they write to the President that the plan I presented to them was a proposal to tighten company union chains, they are reversing the facts. It contained a clause permitting them to vote a company union out of existence, if they have the free and unrestricted votes, and if they do not have such votes, nobody supposes that they have any right to impose themselves upon any group of employes.

Their statement that I have denounced any of them as communists for demanding a 30-hour week is a plain, unvarnished lie. There has been an avowed communist group in town. They, and not these men, demanded a minimum wage of $1 an hour and a 30-hour week for common labor, and I did denounce that as impracticable and insincere. I did not denounce this group. They made no such demand and I believe from my contact with them that they are loyal American citizens, but I said, and I repeat, that in this discussion they have been unreasonable and overbearing, and are rushing in where angels might well fear to tread.

### 85 Per Cent Against Strike

While Amalgamated leaders were drawing headlines by their fiery statements, thousands of steelworkers—181,926 to be exact—went to the polls in their plants last week and voted for representatives on company works councils. This was 85.39 per cent of the total of 213,044 employes eligible to vote.

"By their participation in these elections employes have demonstrated that they are satisfied with these employe representation plans and do not want to strike," comments the American Iron and Steel Institute. "The industry intends to support them in this position and will endeavor in every way to maintain steady employment and weekly payrolls.

"Employes who participated in the elections did so of their own free will. The elections were conducted by employes themselves."

The institute's telegraph compilation of the vote by companies, where elections have been held the past ten days, follows:

| Company or Corporation | No. of employes eligible and available to vote | Total ballots cast | Per cent ballots cast to eligible voters |
|---|---|---|---|
| United States Steel Corp. | | | |
| Carnegie Steel Co. | 28,413 | 24,762 | 87.15 |
| Am. Sheet & Tin Pl. Co. | 21,953 | 19,786 | 90.13 |
| Am. Steel & Wire Co. | 19,526 | 17,772 | 91.00 |
| Tenn. C., I. & R. R. Co. | 7,930 | 5,456 | 68.80 |

*A FIGHTING PRESIDENT: New portrait of Eugene G. Grace, president of the Bethlehem Steel Corp. and one of the three steel executives (W. A. Irvin, of United States Steel Corp., and L. E. Block, of Inland Steel Co., were the others) who represented the industry directly in negotiations with the government leading to acceptance of a mediation board for the steel industry*

| | | | |
|---|---|---|---|
| Illinois Steel Co. | 23,456 | 17,174 | 73.22 |
| American Bridge Co. | 1,962 | 1,839 | 93.73 |
| Lorain Steel Co. | 1,032 | 889 | 86.14 |
| National Tube Co. | 17,444 | 14,735 | 84.47 |
| Columbia Steel Co. | 4,081 | 2,548 | 62.43 |
| Oliver Iron Mining Co. | 3,701 | 3,536 | 95.54 |
| Univ. Atlas Cement Co. | 1,675 | 1,377 | 82.21 |
| Total | 131,173 | 109,874 | 83.76 |
| Youngstown Sheet & Tube Co. | | | |
| Youngstown district | 9,434 | 8,399 | 89.03 |
| Chicago district | 4,872 | 3,991 | 81.92 |
| Total | 14,306 | 12,390 | 86.61 |
| Jones & Laughlin Steel Corp. | 16.036 | 15,356 | 95.76 |
| Republic Steel Corp. | | | |
| Youngstown | 5,532 | 5,466 | 98.8 |
| Warren | 6,200 | 4,506 | 72.6 |
| Canton | 4,122 | 3,685 | 88.0 |
| Massillon | 2,959 | 2,098 | 69.0 |
| Buffalo | 2,954 | 2,900 | 98.1 |
| Chicago | 1,779 | 1,609 | 90.4 |
| Upson Nut division | 1,102 | 1,047 | 95.0 |
| Steel & Tube division | 683 | 668 | 97.8 |
| Berger Mfg. Co. | 450 | 342 | 76.0 |
| Union Drawn Steel Co. | 866 | 723 | 83.5 |
| Dilworth-Porter div. | 233 | 213 | 91.4 |
| Canton Culvert div. | 49 | 49 | 100.0 |
| North Ore Mines | 612 | 603 | 98.5 |
| Thomas Iron Co. | 601 | 583 | 97.0 |
| Total | 28,142 | 24,492 | 87.03 |
| Sharon Steel Hoop | 2,010 | 1,981 | 98.55 |
| Wheeling Steel Corp. | | | |
| Steubenville | 3,745 | 3,468 | 92.6 |
| Yorkville | 2,172 | 1,806 | 83.2 |
| Beechbottom | 562 | 324 | 57.6 |
| Whittaker | 606 | 600 | 99.0 |
| Total | 7,085 | 6,198 | 87.48 |
| Pitsburgh Steel Co. | | | |
| Allenport | 1,485 | 1,142 | 76.90 |
| Monessen | 3,935 | 3,020 | 76.75 |
| Total | 5,420 | 4,162 | 76.79 |
| Inland Steel Co. | 8,872 | 7,473 | 84.23 |
| Grand Total | 213,044 | 181,926 | 85.39 |

At the City furnaces of the Carnegie Steel Co. the percentage of employes voting was 95.64, and the lowest for any plant was 84 per cent. Of the 6206 votes cast at the Homestead works of Carnegie, President Tighe of the Amalgamated received 1 vote. At the Duquesne works of Carnegie, with 3717 voting, William J. Spang, a rank and file leader and head of the local Amalgamated chapter, garnered 3 votes.

Not included in the tabulation are the votes at the Gulf States Steel Co. and Connors Steel Co. in the Birmingham district, but at both the vote against a strike was large.

Also not included in the tabulation is the vote of employes of the Follansbee Bros. Co. at its plants at Follansbee, W. Va., and Toronto, O., 1261 to 2, to reject the proposal to demand a 10 per cent increase in pay.

Preparations for meeting any strike emergency were continued by steel producers last week. While undecided whether to risk the safety of loyal employes at the hands of a few troublemakers or to meet strikers on their own level and also declare a holiday, many plants prepared to house some employes. At Chicago, some stored Pullmans were run on the siding of a steelworks. Provisions and cots were installed in a number of plants.

In Pittsburgh, Mayor McNair, noted as the only Democratic mayor there in years, stated that massed picketing would be prohibited and streets near steelworks would be kept open, though orderly picketing was permissible.

A few days ago Rep. Francis Shoemaker, of Minnesota, was taken to Gary, Ind., for a "monster" mass meeting and spoke for two hours in a broiling sun to less than 400, including curious women and children.

## Labor

DEPARTMENT of justice suit for permanent injunction to restrain Weirton Steel Co., Weirton, W. Va., from interfering with a national labor board election of Weirton employes is set for Sept. 5 at Wilmington, Del.

On May 29, Judge John P. Nields, in the United States district court at Wilmington, refused to grant a temporary injunction in the case. Counsel for the Weirton company has charged that the Amalgamated Association of Iron, Steel and Tin Workers is intimidating witnesses for the company.

## New Capacity

YOUNGSTOWN SHEET & TUBE CO., Youngstown, O., has confirmed the award of a wide continuous hot strip mill to the Mesta Machine Co., Pittsburgh.

The equipment will consist of two slab reheating furnaces, one 96-inch 4-high spreading mill and nine stands of 79-inch 4-high mills, all set up in tandem, complete with hot coilers, run-out tables, hot leveling and shearing equipment, piling rack and other necessary equipment.

The mill will be capable of producing ½-inch to 5/64-inch thick material up to 74 inches wide, 16 gage to 60 inches wide, and 18 gage to 48 inches wide, in various specifications of flat rolled material. Under normal trade demand, monthly capacity will be 40,000 to 60,000 net tons.

The mill will produce hot-rolled sheets in the heavier gages (formerly known as blue annealed, when produced on jobbing mill type sheet mill), pipe skelp for both fire weld and electric weld pipe, commercial plate and hot roll strip. It also will furnish breakdown for present hand sheet mills at both Campbell and Brier Hill works for all specifications of sheets now produced at those two plants from sheet bars.

In connection with the installation, improvements will be made to the No. 2 blooming mill so that No. 1 bloomer can be dismantled to make room for the new mill. It will render obsolete the present sheet bar mill and the 30-inch universal skelp mill.

## Transportation

EDWARD G. BUDD MFG. CO., Philadelphia, Winton engine division and General Motors laboratories of the General Motors Corp., and the Boston & Maine and Maine Central railroads are co-operating in a passenger train research project.

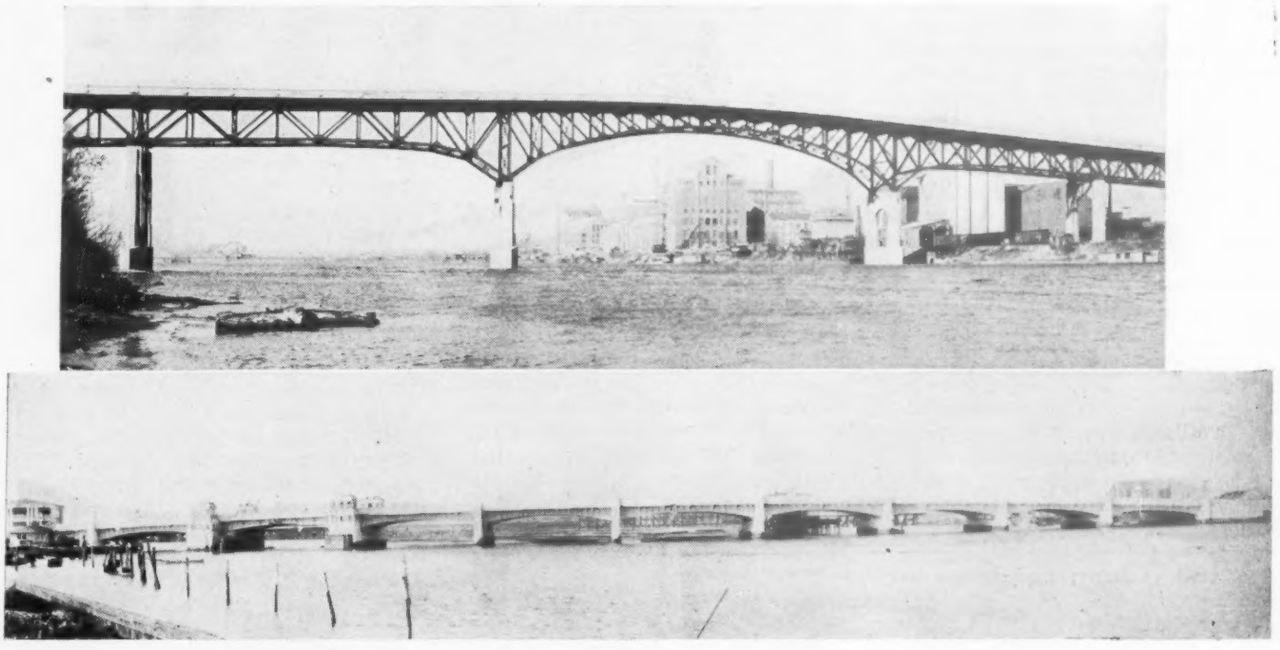
At the Budd plant in Philadelphia will be built a train consisting of three streamlined shotwelded stainless steel cars, powered by a Winton 660-horsepower diesel engine, with a capacity of 150 passengers.

Starting in November, the train will go on a 700-mile daily schedule from Portland, Me., to Boston, to Bangor, Me., to Boston and back to Portland.

According to Edward G. Budd, president of the Budd company and builder of the stainless steel streamlined Zephyr for the Burlington railroad, the new light-weight streamlined train has definitely taken its place in the American railway system.

He forecasts trains like the Zephyr covering the 3200 miles between New York and San Francisco in 48 to 50 hours, compared with 4½ days at present. Prior to this, Mr. Budd expects these new-type trains to make the 908 miles between New York and

## Declared "Most Beautiful" Steel Bridges Erected in 1933



*ABOVE is the Cedar street bridge in Peoria, Ill., first-prize winner in the American Institute of Steel Construction contest in the class costing $1,000,000 or more. In the center is the Shark river bridge, in New Jersey, adjudged best among bridges costing $250,000 to $1,000,000. Among bridges costing less, the "Dr. John O'Loughlin bridge" in Portland, Oreg., shown at the bottom, was first. McClintic-Marshall Corp. erected the Cedar street bridge, American Bridge Co. the Shark river structure, and Poole & McGonigle, Portland, the "Dr. John O'Loughlin bridge"*

Chicago in 14 hours instead of 17¾ to 20 hours.

¶With a $2,000,000 loan from PWA, the Illinois Central railroad plans to build a streamline train to cost $500,000 and to purchase 11 diesel locomotives with the remainder.

# NRA

VARIOUS statements by NRA officials effecting a retreat from the recent statement that pricing regulations of codes were to be eliminated confirmed last week's report that no change is contemplated in the price provisions of the steel code as extended indefinitely from June 11.

According to NRA Administrator Johnson, "the main purpose of the announcement was to obtain some uniformity in future codes . . . In no event will there be any imposed change in any approved code or any change suggested without relation to the particular conditions in that industry . . . It should be clearly understood that all of the provisions of approved codes, including their price provisions, are in full force and effect and must be complied with."

¶Comparing conditions in the steel casting industry in March, 1934, with July, 1933, to measure the effect of the steel casting code, the Steel Founders' Society of America notes that the average number of employes in March at 22,143 was an increase of 32 per cent. The average hours worked per week of 30.5 was a decrease of 19.5 per cent, while the average hourly wage rate of 53.8 cents was an increase of 14.8 per cent.

Production costs have been measurably equalized throughout the industry, more valuable statistics are now available, many unfair trade practices have been eliminated, the industry has been able to classify and price its products on a more scientific basis, and the open-price code provision has almost entirely eliminated vicious price cutting and chiselers, it is claimed.

¶Codes approved: Supplementary codes for the water power equipment and rolling mill machinery and equipment industries, effective June 18; supplementary code for cutting die manufacturing industry, June 18; kalamein industry, effective June 19; pulverizing machinery and equipment industry, June 20; steam engine, reduction machinery and rock and ore crusher industries, June 22.

¶Hearings set: For 13 automotive parts and equipment manufacturing industries, June 25-29; alloys industry, June 25; amendments to steel plate fabricating code, June 25.

# Production

STEELMAKING operations were steady last week at 62 per cent. In all districts, with exception of a 1 point decline at Cleveland and a drop of 18 points at Detroit, steel schedules were stationary or showed a slight improvement. Operations this week are at the mercy of strike developments and in case the strike does not eventuate, a moderate decline is probable. Details for various districts follow:

**Youngstown**—Unchanged at 66 per cent last week, with indications that the rate will dip slightly to 64 per cent at the beginning of this week. However, a gain of several points later in the week is likely as shipments on second quarter contracts increase.

**U. S. STEEL CORP. SHIPMENTS**
(Inter-company shipments not included)

(Tons)

| | 1934 | 1933 | 1932 | 1931 |
|---|---|---|---|---|
| Jan. | 331,777 | 285,138 | 426,271 | 800,031 |
| Feb. | 385,500 | 275,929 | 413,001 | 762,522 |
| March | 588,209 | 256,793 | 388,579 | 907,251 |
| April | 643,009 | 335,321 | 395,091 | 878,558 |
| May | 745,063 | 455,302 | 338,202 | 764,178 |
| 5 Mo. | 2,693,558 | 1,608,483 | 1,961,144 | 4,112,540 |
| June | 603,937 | 324,746 | 653,104 | |
| July | 701,322 | 272,448 | 593,900 | |
| Aug. | 668,155 | 291,688 | 573,372 | |
| Sept. | 575,161 | 316,019 | 486,928 | |
| Oct. | 572,897 | 310,007 | 476,032 | |
| Nov. | 430,358 | 275,594 | 435,697 | |
| Dec. | 600,639 | 227,576 | 351,211 | |
| Yrl. adj. | 44,283 | 5,160 | 6,040 | |
| Total | 5,805,235 | 3,974,062 | 7,676,744 | |

**Cleveland-Lorain**—Steelworks operations dropped one more point to 77 per cent as an average for the week ended June 16. At Lorain, the National Tube Co. continued with all of its 12 open hearths active; Corrigan, McKinney Steel Co., here, operated 12 of its 14; and Otis Steel Co., 6 of its 8 units. No immediate change is contemplated in schedules, much depending on labor developments.

**Chicago**—Held at 70 per cent the past week, the best rate for the year, with 14 of 36 steelworks blast furnaces continuing active. Barring shutdowns or curtailment in output due to strikes, recent operations are expected to be continued over the balance of this month.

**Wheeling** — Steel production was up two points here last week to 81 per cent, with 31 out of the 39 open-hearth furnaces active in the four district plants.

**Detroit**—An 18-point decline was recorded in the district's steel ingot operating rate to 82 per cent last week, when one producer here took off three open-hearth furnaces. As of last week there were 14 out of 17 open-hearth furnaces operating here.

**Pittsburgh**—A further 2-point advance in steelmaking schedules here places the district's average at 56 per cent, highest for the year. This percentage is supported by the current rate of steel buying, plus the added fact that many schedules were increased last week to bring out full mill forces for employe representation plan elections.

The same number of blast furnaces in this district continue to operate, with blast on in 26 out of the 60 here, or a theoretical 44 per cent pig iron production operation. Individual blast furnace operating rates have not varied from a week ago, with 13 of the 26 being Corporation subsidiary stacks and 13 being operated by the four local independents.

**Buffalo** — Increased 3 points last week to 58 per cent and this rate is expected to hold for this week. Twenty-two open hearths are producing ingots and all are expected to continue this week, barring unexpected developments.

**New England** — Unchanged last week at 70 per cent, with operation schedules for this week likely to be maintained.

**Birmingham**—Continued at 55 per cent, with 13 to 14 open hearths in operation. There is some steel on yards and no scarcity of the product is expected. It is intimated that a greater number of workers in steel mills are not in favor of a general holiday.

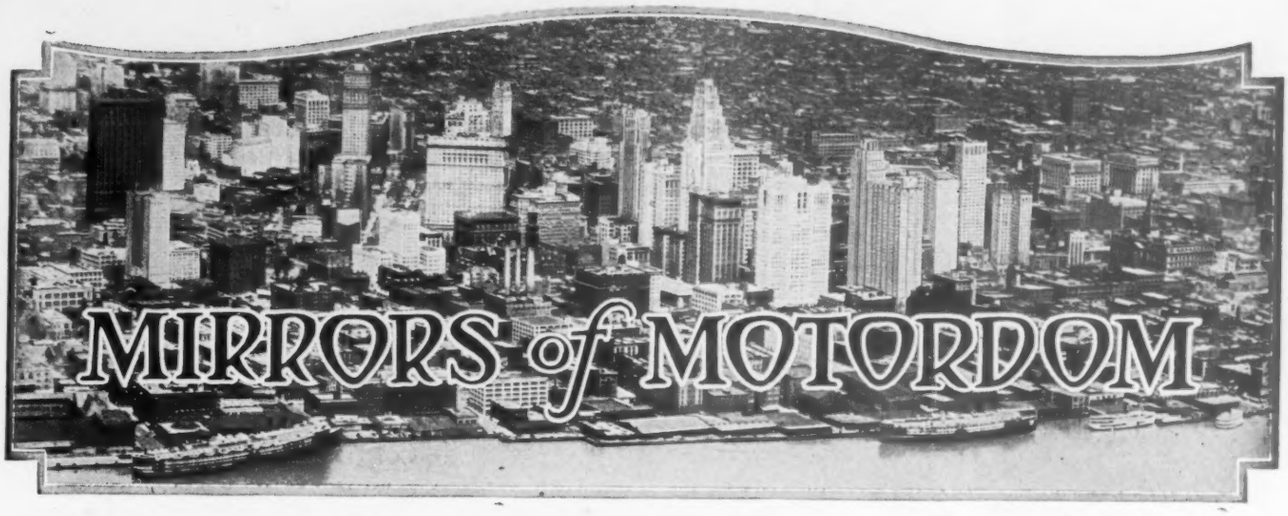
**Central eastern seaboard** — Unchanged at 46 to 47 per cent, with little variation expected over the remainder of the month. However, a further slight expansion in finishing operations during the past week was indicated.

¶Shipments of finished steel by the United States Steel Corp. in May, at 745,063 tons, were the heaviest since May, 1931, when 764,178 tons were moved, even exceeding the 701,322 tons shipped in July, 1933, prior to the operation of the steel code, when general advances were being put into effect. The gain over the preceding month was 102,054 tons and brought the total for the first five months up to 2,693,558 tons, against 1,608,573 tons in the corresponding period of last year.

# Meetings

ELECTRIC Metal Makers Guild will hold annual meeting at Pittsburgh Athletic association, Pittsburgh, June 29-30. Technical sessions have been arranged by the local committee, consisting of J. H. Chivers, chairman, L. B. Knox, and D. J. Giles. Joseph

(*Please turn to Page* 85)




*DETROIT*

MODERATE increases by Chevrolet and Plymouth, plus a stationary position by Ford, enabled automobile production to register a slight gain last week. Total assemblies are estimated at 71,293 units, compared with 69,107 in the week ended June 9, 54,185 in the week ended June 2 (including the Memorial day holiday), and 76,281 in the week ended May 26.

This indicates that June production will not fall below 275,000 units and may be close to 300,000, compared with an estimate of 350,000 units in May and 360,620 in April. In May, 1933, production was 227,743 units.

Chevrolet assemblies last week, according to *Cram's Reports*, increased to 18,800, compared with 17,500 the week preceding. Plymouth registered an even greater gain when it increased from 8000 to 9750. Ford was unchanged at 21,485 units.

Buick last week slid off fractionally when it assembled 2500 units, against 2600 in the week ended June 9. Nash was unchanged at 1750 units, Pontiac at 1250, Olds at 3000, Willys at 750, Cadillac-LaSalle at about 375, and Hupp at about 200.

Studebaker more than doubled, its 1200 units last week comparing with 550 in the week preceding. Dodge was down 125 units to a total of 3500; Reo was off 150 units, to 600; Chrysler declined from 1250 units to 700, and DeSoto from 625 to 400, indicating that deliveries on the new airflow models have caught up.

Auburn slipped slightly to 175 units, while Graham was off 60 to 190. Packard production was about 75 units and Lincoln and Pierce Arrow each 35 to 50.

THE automobile industry isn't ready yet to play Atlas—the role of that sturdy mythological gentleman who carried the world on his shoulders. Accordingly, it is attempting to pass along much of the recent price reductions in the low-price field, probably averaging $50 per car, and parts makers are being called upon to contribute their share.

Last week the news leaked out that many parts suppliers have been requested to shave their prices approximately 10 per cent. This 10 per cent, figured for the average car, would come close to meeting the major part of the reductions in most instances.

Parts makers feel they are being put on the spot, because steel prices generally are being advanced July 1, cushioned only by inventories at current prices which would carry most makers 30 to 60 days. In view of the touchy situation in labor, wage rates could not be tampered with at this time.

While steel is the major material used by parts makers, steel, rubber, glass, fabric and other materials also would be affected.

A good many in Detroit believe that automobile manufacturers would have been smarter to have reduced prices when they advanced them early in the spring, or to have stood pat as Ford did then, with possibly an increase at this time.

Ford craftily parried his competitors' price reductions by announcing some cuts of his own—$10 to $20 on all models except cabriolet, roadster and phaeton. Effective last Friday, first announcement of the slash came at the end of the Ford radio program Thursday night. By this adroit move, Ford puts his prices at a new low for 1934, thus sharpening competition in the low-price field.

## Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

| | |
|---|---|
| 1934 | |
| January | 161,086 |
| February | 235,384 |
| March | 336,016 |
| April | 360,620 |
| Estimated by *Cram's Reports* | |
| May | 350,000 |
| Week ended | |
| May 26 | 76,281 |
| June 2 | 54,185 |
| June 9 | 69,107 |
| June 16 | 71,293 |

HOUDINI would turn over in his grave if he saw the magic with which Ford is again holding his new small car in complete readiness, yet undisclosed.

It was about a year ago that the small Ford, designated simply as "44" on shop schedules, became known as about ready to be put on the assembly lines. The car, as nearly as could be learned, was a small edition of the V-8, a thrust at a virgin price field.

Chassis, motor, and body were all to be smaller and some degree of fender and body streamlining was in store. But, for some fancy best known to only two or three men at the top at Dearborn, the car was held in abeyance. Today, however, events stand something like this:

Within the past few weeks there has been a marked revival of estimating on certain of the "44's" parts. Banks of many of these parts have been built up at Dearborn. Certain chemical and size specifications for steel have been changed, apparently in accordance with plans for the small car.

Some retooling has been going ahead slowly over the past year, but probably not as much in actuality as is still being figured. Yet behind all the present stir is the fact that Ford is known to have spent some $2,000,000 for new machinery designed solely for "44".

While paid for, many of these machine tools and equipment are still stored in the plants of the equipment makers all over the country, as shipment is yet unspecified. However, so well are plans laid that this machinery is completely set up with jigs and fixtures ready for immediate production.

So close is this to being a fact that those usually well informed say that just about all materials for the present V-8 cars have been bought and

the "44" is close to being an actuality. But, the big "if" as always at Ford's is the whim or fancy of a few at the top which in most cases results in sudden and unexpected decisions.

If the small Ford is brought out at this time—that is, in the coming summer months—many will be surprised even though plans are nearly ready.

In the final analysis it does seem reasonable that the small Ford will come out when production drops off on the present lines. Today, Dearborn is assembling 4000 to 4200 models daily, in other words an 80,000-unit month.

And, since it has been common supposition for so long that there must be some truth to it, that Ford makes money on everything produced over 50,000 cars monthly and loses on everything under, it hardly seems logical that the swingover will come this month or next.

IF FORD'S "44" were held up as the only embryo automobile in Detroit today it would be relating a gross untruth, for the Canadian mother of quintuplets has nothing on the motor industry.

For instance, LaSalle precipitated something when it brought out a cheaper car early this year. Packard got the bug and is completing plans on its small car. Now Lincoln has thoughts along the same line, especially so since its field stocks confirm that the public is buying low-priced cars and the brake has been put on Lincoln assemblies at Highland Park.

For some of the rest, it is the exceptional motor maker today that hasn't some weather eye cocked on what to spring next. Coming Plymouth and Dodge models have already been detailed in these columns. Pontiac is drying the ink on plans for its new six. Studebaker comes out with a new series about July 1. Graham will go to a changed appearance through a new style fender and rear-end.

Experimental work at Auburn over the past four years is reported to have culminated in the perfection of a real "wow" in motordom. A car in the $600-$700 class, independent springing on all four wheels, 6-cylinder motor with economy of 30 miles to the gallon, front wheel drive and streamlined is said to have reached the proving ground stage, with unqualified approval from Auburn officials. However, since early this year, work on this super-car has been held up, for various reasons.

Auburn has already started making a new series with both a changed rear and radiator shell. An important basic change is in store for DeSoto, divorcing it from the airflow design which will go over in toto to Chrysler. And, last but not least, with all apologies to Ripley, Buick has ideas afloat for a new car—presumably the 1935 series—despite the fact that its lower-price series "40" is hardly a month old!

EVENTS surrounding Packard's small car, that is supposed to sell in the $1000 class when it appears, are setting an unusual precedent in this respect: Few coming models as this one have been confirmed by the company's executives, yet subsequently delayed for so long before actual appearance.

Packard held its annual meeting the third Monday in April and at that time President Macauley confirmed to stockholders what Detroit had heard for some months, that the company was to enter the lower-price bracket with a small car.

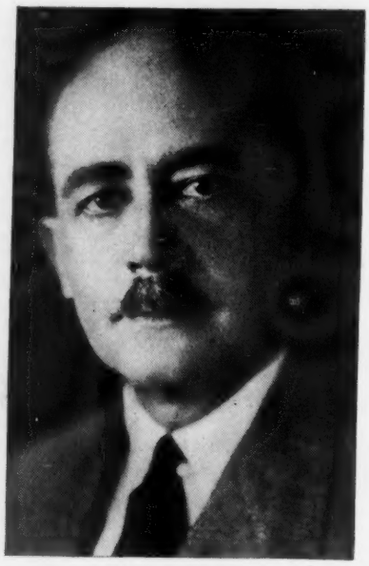
Work was under way, he said, on the new car and introduction was to be expected. However, from all reports last week in Detroit the new Packard is still quite a ways off from public view.

Design of many of the important parts, such as the transmission, has not even been settled on yet, although most of the fender, body and panel dies have all been made and Briggs Body has taken the contract for the body work when it is ready to go.

Packard has arranged some of its plant facilities and will assemble the small job in the former truck division, which is just opposite to its main office building. At the same time rearrangement of other plant facilities is proceeding so as to accommodate its regular 1935 model production of eights and twelves. Incidentally, Detroit hears that the latter lines will come out shortly after Sept. 1.

## New Institute Directors Are Named

FRANK R. FROST, recently elected to the board of directors of the American Iron and Steel institute, is president of the Superior Steel Corp., Pittsburgh, and is well versed in the problems of the smaller steel manufacturer. Born in Meadville, Pa., he graduated from Allegheny college there in 1905. He did engineering work for the Southern Railway and in 1907 was assistant engineer in construction of the Hales Bar dam at Chattanooga, Tenn. In 1910 he was named superintendent of construction for the New York barge canal at Waterford, N. Y., and in 1911 became superintendent and assistant to the president of the Pittsburgh-Hickson Co., Butler, Pa. Six years later he joined the sales force of Superior Steel, becoming assistant sales manager, then general manager of sales, vice president in 1925 and president in 1927. He is a member of numerous Pittsburgh clubs.



EDWARD L. PARKER, also a newly-elected Institute director, brings to this post a wealth of merchandising experience. He is president of three steel products companies—Columbia Steel & Shafting Co., Summerill Tubing Co. and Edgar T. Ward's Sons Co. Born in Detroit, his first affiliation with the steel industry was in 1900 with the Pittsburgh Shafting Co. of Detroit. In 1911 he removed to Pittsburgh to become general manager of Columbia Steel & Shafting, rising soon to the office of vice president and general manager. In 1918, after the death of Capt. Thomas W. Fitch, he became president. In 1922 he also assumed presidency of the Ward company, and about three years ago became chief executive of the Summerill company. He is fully conversant with problems of the nonintegrated steel mills and has won wide recognition for his analyses of steel prices.

# WINDOWS OF WASHINGTON

*WASHINGTON*

TWO important revelations were made in Washington last week in connection with the handling of the steel strike.

One of them denoted the elastic limit and yield point of the administration's attitude toward organized labor leaders.

With only a few exceptions, these leaders came to Washington in the most militant spirit that so far has been reflected here by any labor representatives.

They demanded that the President call a conference between them and the directors of the American Iron and Steel institute.

They got as far as General Johnson. Unmoved by their violent denunciations and strident demands, the President refused to receive them.

## The General Minces No Words

The general tendered them the most caustic treatment so far given any labor group at Washington.

"They cannot utilize the government to force a particular form of organization on any group of employes unless that group themselves chooses it," said the general.

"When they write to the President that the plan I presented to them was a proposal to tighten company union chains, they are reversing the facts.

"It contained a clause permitting them to vote a company union out of existence, if they have the free and unrestricted votes, and if they do not have such votes, nobody supposes that they have the right to impose themselves upon any group of employes."

The other important revelation of the past week was that the status of the steel industry with the present administration has improved tremendously. A year ago this industry was not highly regarded by those in command in Washington. Today the situation is vastly changed.

The quiet sincerity with which the steel industry has helped to increase general purchasing power by increasing its number of employes and its disbursements of wages, and the honesty with which it has lived up to its code, have registered a favorable impression at Washington.

Administration leaders are pleased with the co-operative attitude of steel leaders, and their willingness to go along with the present administration.

Of course, many factors are involved in practical politics, and there may be some giving and taking here and there. But it may be said positively that it is the administration's disposition to protect the steel industry against unwarranted and illegal encroachments on the part of ill-advised labor leaders who are seeking to improve their own personal position by taking advantage of the administration's liberal attitude.

The fact that the steel company heads were willing to accept the administration's plan for an industrial relations board, whereas the labor leaders refused to consider this proposition, had a lot to do with the crystallization of the administration's present attitude toward the steel industry.

It may be said, incidentally, that it seems to be felt here that the steel industry has done all that it can for its employes, as of the present time, that present steel prices are not too high, and that this attitude will not be changed until such time as the steel industry has gotten past the hurdle of making some profits for stockholders.

## It Cost $108,000,000,000

*THREE years of depression—1930 to 1932 inclusive—cost the American people* $108,000,000,000, *nearly two-thirds being suffered by owners and investors in business, and a little over one-third by employes, according to the National Industrial Conference Board, New York.*

*Taking* 1929 *as a base, total loss to employes in wages and payrolls in those three years exceeded* $37,000,000,000.

*Reductions in produced income for persons in business for themselves, in rents and royalties, and in interest in dividends on invested capital was* $47,400,000,000.

*Business losses reduced assets of individual proprietors and of corporations* $23,200,000,000.

## Claims Metal Cost Too High

Federal Co-ordinator of Transporation Eastman cites as one of his present objections, in order to reduce cost of railroad transportation, a thorough study of the possibilities of light-weight equipment in both passenger and freight service. But he feels the cost of light-weight metals is too high. He expresses himself as follows:

"In an address which I made not long ago, I stated that indications point toward a far greater use of light-weight metals in the construction of railroad equipment, but that prevailing high prices of those metals would prove a serious obstacle, and that these prices can and should be reduced.

"That comment did not receive the attention which I hoped it would, for it is important not only in itself but as an illustration of a general principle. Much money has been made in the past in sales to, and in other business dealings with, the railroads.

"Much business can be done with the railroads in the future, but it is essential that the opportunities be most carefully nursed and cultivated. No better way exists than to bring down prices to the lowest possible level. If this is not done, the opportunities are very likely to be lost or greatly curtailed."

In transportation circles here the opinion is growing that light-weight

trains will grow in number and will not only include passenger but also freight equipment. The railroad administration figures that by cutting the weight of a freight car one ton, the saving in haulage cost is just about $25 per year. This does not make any allowance for the savings entailed in the fact, for instance, that metals like aluminum and stainless steel do not rust and do not need to be painted. Prices on such metals are believed to provide the only brake against their general adoption for the purpose of cutting operating costs by reducing the nonrevenue weight which has to be hauled by the railroads.

## No Army Funds for Stainless

Through lack of funds, the army's contemplated first use of stainless steel as outside decorative trim has been abandoned. The new headquarters building at Fort Monmouth, N. J., was designed with external decoration of stainless steel, but this feature of the plans has been eliminated because of the considerable increase in cost that would have resulted.

Use of stainless steel for dairy equipment is not unanimously recommended in Washington. This is no reflection on stainless steel, which is regarded as an ideal material for exposure to milk. It is held that no industry is quicker in replacing equipment because of obsolescence than the dairy industry.

Also, there is no industry in which improved equipment is introduced with greater rapidity. It therefore is held not to be good business in all cases to construct equipment out of an expensive, eternally-lasting metal such as stainless steel, and then have it thrown out because of the development of an improved unit.

## A New Use for Steel

A 10-cent store business, in that the units are small but the volume great, plans of the United States public health service to resume large-scale construction of sanitary privies in 23 Southeastern states and in the state of Washington are of interest to the steel industry.

It is expected some 200,000 units will be constructed in June to December, the government will supply the labor and the communities benefited will buy the materials and tools. The work, of course, is part of the program to prevent spread of typhoid and other germs by means of houseflies.

In construction of 250,000 of these units in the movement launched last December, these materials were used: 100,000,000 board feet of lumber, 40,000 barrels of cement, 1,000,000 pounds of nails, 300,000 pairs of hinges, 500,000 bolts and nuts, 6,000,000 square feet of roofing, mostly steel, and a large quantity of reinforcing steel. Cast iron risers for these units now are manufactured by 13 Southern foundries. Arrangements have been made for warehousing and distributing these materials in all the states affected.

Tennessee Coal, Iron & Railroad Co. has constructed a steel privy, circular in shape, 4½ feet in diameter, with steel frame, and sheet steel sides and roof. It is priced at $28 to $30, but may be produced in volume at $24 or $25, it is thought.

First study of the administration's drought relief policy leads to the conclusion that it will stimulate business all through the affected areas. The plan for placing needy farmers on the relief payroll will involve the purchase of large amounts of materials and equipment of various kinds for use in the relief construction and repair work to be done by these farmers. Such purchasing will be done locally in the main.

## Dig Up Pipe Corrosion Samples

National bureau of standards is exhuming another batch of pipe buried in soil in various parts of the United States. This pipe was buried in 1922 and samples are dug up and studied every two years to determine the effects of soil corrosion. The last report was published in January of this year.

It is estimated 30,000 to 35,000 hand tools will be bought by southern communities in the next couple of months for draining swamps as part of the malaria control campaign of the public health service. The tools used will be largely brush hooks, long and short-handled spades, shovels, axes, potato hooks and block and tackle. The government will supply the labor.

An annual conference among nations for the purpose of discussing international production and distribution, is advocated by Secretary Roper. At a press conference, he commented on the new reciprocal tariff law as a big step in the right direction.

"If such an annual international conference could be worked out," he said, "it would solve half of the manufacturing problems of this country." Manufacturers here are not so optimistic in regard to the reciprocal tariff law, which they fear may set up business instability through uncertainty as to future tariff manipulations.

An interesting new requirement item of the past week is the inquiry of the postoffice department for 196 tons of cold-rolled strip steel, on which bids will be opened on June 20. This strip will be utilized at the mail equipment shop in Washington where it will be formed into eyelets, locks and other parts and equipment for mail bags. This amount of strip is expected to take care of the requirements of this shop for the next six months.

# 'Impossibility' of 1923 Is Fact of 1934

*IN 11 years the "impossible" has been achieved by the iron and steel industry in humanizing labor.*

*From a schedule which provided 12 hours a day, 7 days a week, for a large proportion of the wage earners prior to the fall of 1923, the industry by its revised code now has decreed a maximum of 8 hours a day, a limit of 48 hours in any one week, and an average of not more than 40 hours a week over a six-months period.*

*Though leaders in the industry publicly stated that the abolishment of the 12-hour day was desirable, when the country practically closed its doors to immigrants 11 years ago a labor shortage developed and the problem appeared almost insurmountable. Notwithstanding this, the industry in August, 1923, following conversations with President Harding, announced its intention to begin immediately to eliminate the long day.*

*A few days later wages were increased to compensate the men for the reduction in their time. For a long period 10 hours a day was the maximum, with the majority of employes on duty only eight hours. Steady improvement in mechanization and management was cutting this down to a regular 8-hour day, when the depression reversed the problem and made it difficult to provide work. From the time the steel code was made effective, last Aug. 17, to Dec. 31 the average work week was 29.2 hours.*

*Ever since the department of labor began systematically to compile statistics on hours of labor and wages paid in the steel industry, its investigations have disclosed a steady trend downward in the number of hours that are considered "full-time per week," and persistent increases in hourly earnings.*

*The government makes its surveys in the spring of the year. In 1913 it reported average full-time hours per week for all departments of the iron and steel industry as 66.1; and at the corresponding time in 1933, this figure was 51.5.*

*Actual average hourly earnings rose from 30.1 cents in 1913 to a peak of 74.5 cents in 1920. No survey was made in the depression year of 1921, but in 1922 the hourly earnings averaged 51.3 cents. In 1929 they were 67.4 cents.*

*The average 48.5 cents given by the department in its report for 1933, of course, does not reflect the wage increases in the last half the year, which with the increases in April this year brings the average slightly above that of 1929.*

# Industrial Men in the Day's News

## L. S. Hamaker, Vice President and General Manager, Berger Mfg. Co.

A native of Canton, O., he now returns there to direct activities of this Republic Steel Corp. subsidiary.

For a number of years he has had charge of advertising and sales promotion for the parent company.

He is recognized as an earnest advocate of merchandising special steels to fill particular needs.

L. S. HAMAKER, who, as noted in STEEL for June 11, has been appointed vice president and general manager for the Berger Mfg. Co., Canton, O., a subsidiary of Republic Steel Corp., was born in Canton and has spent most of his life there, graduating from Canton high school in 1914.

He spent several years in construction work and in steel mills of the district. Enlisting in the marine corps at the time of the World war, he was discharged in May, 1919. He then became associated with the Berger company as sales clerk and two years later was transferred to the advertising department.

In 1925 he was made advertising manager of Berger and the United Alloy Steel Corp. of Canton. The following year, United Alloy merged with the Central Steel Co. of Massillon, O., to form the Central Alloy Steel Corp., and Mr. Hamaker continued as advertising manager of the new corporation.

When Republic absorbed Central Alloy in 1930, he was named advertising manager of the former and in 1931 transferred to Youngstown, O., to form a sales promotion department, while continuing in charge of advertising for Republic and in a general way for the subsidiary companies. During this time, he was made president of the Toncan Culvert association and placed in charge of Republic's training course for sales students. He has continued in these capacities until recently.

Modestly disclaiming any proficiency at golf, Mr. Hamaker at least has made a successful hobby of awakening a merchandising consciousness in certain branches of his industry (see STEEL, March 5, p. 16).

□ □ □

S. C. Du Tot has been appointed Chicago district manager of sales of the Electro Metallurgical Sales Corp., New York. Offices will be in the Union Carbide & Carbon Corp. building, Chicago, where until recently the Electro Metallurgical corporation has maintained only service offices.

J. F. Donovan has been appointed Cleveland district sales manager, a newly-created office, with headquarters located in the Union Trust building.

Both men formerly were identified with the New York general sales offices.

□ □ □

Edward C. Gainsborg has been appointed general manager of the Roller Bearing Co. of America, Trenton, N. J. He formerly was associated with the company for several years as sales manager.

□ □ □

J. R. Bateman has been appointed to handle specialized sales and engineering service on products of the Bunting Brass & Bronze Co., Toledo, O., his headquarters to be in Chicago and territory to include Illinois, Wisconsin, Minnesota, Missouri, Iowa and Kansas. Previously he has been associated with Metal Products Co., Detroit; Chalmers Motor Co., Detroit; Bearings Service, Chicago; Hyatt Roller Bearing Co.; Moraine Products Co., Dayton, O., and others.

J. F. Roberts has been appointed manager of the Bunting branch office at Dallas, Tex.

J. H. Roberts has been named manager of the Kansas City, Mo., branch.

F. W. Roberts is the new manager of the metropolitan New York branch.

□ □ □

Victor Crosby, formerly foundry metallurgist for the Studebaker Corp., has been appointed to the metallurgical staff of Climax Molybdenum Co., New York, as foundry metallurgist, with headquarters in Detroit.

□ □ □

David Firth has been named vice president in charge of engineering for the Marvel Carburetor Co., Flint, Mich. He has been with the company for the past 14 years.

□ □ □

John E. McCauley has been appointed president of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., following a reorganization of officers of the company, effective June 1. He formerly was vice president and general manager.

John E. McCauley

Robert E. Brooke, formerly president, has been elected chairman of the board. George Brooke has been named a vice president.

□ □ □

Victor Preston, body designer for the Reo Motor Car Co., has resigned to take charge of the engineering division of the Detroit Moulding Co., Detroit. He has had 21 years of experience in designing automobile

bodies and was responsible for the body style of the new 1934 Reo model.

□ □ □

Henry B. Rust, chairman of the board, Koppers Co., Pittsburgh, recently received an honorary degree from Oglethorpe university.

□ □ □

H. D. Fowler, formerly representing the Pittsburgh-Des Moines Steel Co. in the Seattle territory and head of the Fowler Steel Co. there, has been appointed superintendent of Seattle's municipal water system.

□ □ □

J. N. Yeager, recently in charge of core oil sales in the Chicago district for the Spencer Kellogg Sales Corp. and for the past 21 years identified with that company, has become associated with the Certified Core Oil & Mfg. Co., Chicago.

□ □ □

Charles E. Adams, president, Air Reduction Co., New York, is now a division administrator of NRA, succeeding K. M. Simpson, president of the International Chromium Process Co., who retired from NRA June 1.

□ □ □

Charles W. Dean has been made district manager of the Cleveland office of Crocker-Wheeler Electric Mfg. Co., succeeding the late Fred C. Eckworth. A graduate electrical engineer, he has been wtih the company for the last five years.

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F. T. H. Youngman, formerly secretary and treasurer of the Jessop Steel Co., Washington, Pa., has been elected vice president and treasurer of the company.

R. J. Murray, formerly assistant secretary of the company, has been appointed secretary.

□ □ □

J. O. Ferch, advertising manager of the Harnischfeger Corp., Milwaukee, has been elected president of the Milwaukee chapter of the National Association of Industrial Advertisers. He succeeds L. P. Niessen, of Cutler-Hammer Inc., who was elected to the board.

A. J. Andrews, Bucyrus-Erie Co., was elected vice president, and E. E. Lashway, Allis-Chalmers Mfg. Co., secretary and treasurer.

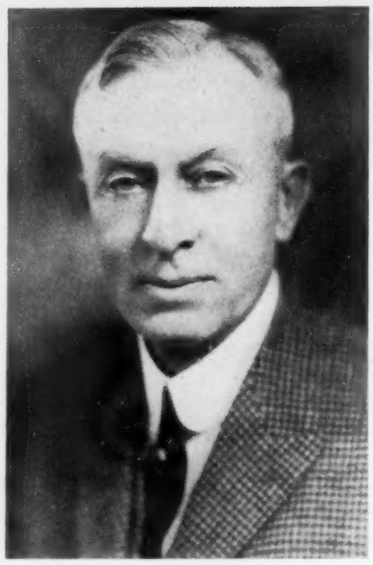
□ □ □

Arthur Simon, from 1903 to 1921 in charge of alternating-current engineering for Cutler-Hammer Inc., Milwaukee, and now its expert consultant, on June 13 received the honorary degree of doctor of science from Marquette university, Milwaukee.

□ □ □

O. A. DeCelle, vice president of the International Filter Co., has been elected president of the Engineering Advertisers' association, Chicago, succeeding Milo E. Smith, Chicago Bridge & Iron Works.

Other officers include: Vice president, W. T. Watt, Fairbanks, Morse & Co., secretary, W. D. Murphy, Sloan Valve Co.; treasurer, Ralph Williams, B. F. Gump Co.; and directors: L. W. Kimball, Acme Steel Co.; Stuart Phillips, Dole Valve Co., and B. R. Graff, Creamery Package Mfg. Co.



**Louis C. Lustenberger**

Who as noted in STEEL for June 11 has been appointed assistant to the vice president and general manager of sales for the Carnegie Steel Co., Pittsburgh.

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Charles M. Schwab, chairman of Bethlehem Steel Corp., is recovering from a fall sustained during the graduation exercises at St. Francis college, Loretto, Pa., near his country home and at which he once was a student.

□ □ □

Isham Keith, graduate of Lehigh university and at various times in the employ of the Bethlehem Steel Co., Western Electric Co., and Pratt & Whitney Co., has been appointed administration member on the code authority for the screw machine products manufacturing industry.

□ □ □

David Newhall, formerly sales agent of steel cars and auxiliary locomotives for the Bethlehem Steel Co., and at various times associated with the George M. Newhall Engineering Co. and Motor Stoker Corp., has been named administration member on the code authority for the stone finishing machinery and equipment industry.

□ □ □

J. B. Knight, of J. T. Knight & Son Inc., Columbus, Ga., was elected president of the southern chapter of the Institute of Scrap Iron and Steel at the June 6 conference of southern dealers at Atlanta.

A. Cohen of the Lynchburg Iron & Metal Co., Lynchburg, Va., was elected chairman of the regional code committee.

□ □ □

George P. Thomas, president, Thomas Spacing Machine Co., Glenshaw, Pa., sails June 20 for an extended trip through Russia. He will visit several Russian steel plants and return in about three months.

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Edwin Hodge Jr., president, Pittsburgh Forgings Co., Corapolis, Pa., has been elected a member of the executive committee of the Pittsburgh & Lake Erie railroad, succeeding C. B. Seger.

□ □ □

Frederick B. Heitkamp on July 1 will become staff assistant in marketing and sales research for Lyon Metal Products Inc., Aurora, Ill., resigning his position as sales manager of the Cincinnati Milling Machine Co., Cincinnati with which he has been connected since 1921.

□ □ □

James A. Long, former general manager of the Woodward Iron Co., Birmingham, Ala., has been named district sales manager of the Macwhyte Co., Kenosha, Wis., maker of wire rope, to succeed the late James A. Boope. Headquarters will be in Birmingham and territory will include Alabama, Virginia, Georgia, Mississippi, Arkansas, Tennessee and Florida.

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# Died:

MARK L. TYROLER, New York district manager for Luria Bros. & Co., scrap dealers, in New York, June 12. He had been with the Luria organization for more than 20 years.

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Clarence Fancher, 78, manufacturer and inventor of paper-making machinery, in Hudson Falls, N. Y., June 10. At one time he was a partner in the Dix Foundry & Machine Co., Glens Falls, N. Y., later becoming associated with the Sandy-Hill Iron & Brass Works, Hudson Falls.

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Joseph A. Igoe, 53, member of the steel and wire firm of Igoe Bros., Brooklyn, N. Y., in that city, May 27. He was manager of the Jamaica, N. Y., branch of the company.

□ □ □

Laurel E. Wallace, 40, secretary-treasurer of the Hittle Machine & Tool Co., Indianapolis, in Evansville, Ind., recently.

□ □ □

Marshall R. Williams, 48, vice president of the Braden Mfg. Co., Terre Haute, Ind., steel fabricator, in that city recently.

□ □ □

John C. Lord, superintendent of the Colorado & Wyoming Railroad Co., subsidiary of the Colorado Fuel & Iron Co., in Pueblo, Colo., May 28.

# Purchasing Agents Will Air Problems Under NRA Codes

CONVENING just two days following the first anniversary of the national industrial recovery act, members of the National Association of Purchasing Agents—in Cleveland for their nineteenth annual international convention and Inform-a-Show—face what undoubtedly will prove to be the most important series of sessions in the organization's history.

Appropriately, the theme of the convention will be "Purchasing Agents' Problems under the Codes." Discussion of many phases of this subject is provided for in the extensive program of meetings, which extend from Monday, June 18, through to adjournment at noon Thursday, June 21.

The program embraces five general sessions; breakfast, luncheon and dinner meetings for various groups of purchasing agents; the annual banquet; and plant visitations, golf, etc.

First among the general sessions dealing with NRA codes is that scheduled Monday afternoon when the benefits and handicaps to purchasing agents and the new responsibilities of purchasing agents under codes will be discussed. Tuesday morning the general topic is "Developments Which Must Influence Purchasing Policies." This will involve discussion of cost determinations and sales policies as they affect prices. The Wednesday morning general session will be devoted to "Codes and the Purchasing Agent," under which heading the principal topics are NRA's price policy, NRA's plans for industry and NRA's responsibility to the buyer. The final session on Thursday morning will be an open forum in which representatives of the steel, coal, lumber and textile industry code authorities will participate, together with a number of purchasing agents, economists and marketing experts.

### Specific Problems Considered

The luncheon, dinner and Tuesday afternoon meetings afford apportunities for purchasing groups to air their own specific problems. The educational, governmental, iron and steel and textile groups will convene

## Condensed Program of Nineteenth Annual Convention

### Monday, June 18

GENERAL CONVENTION SESSION, 9:00 A. M.

Invocation, address of welcome and response.
Address, P. W. Litchfield, president, Goodyear Tire & Rubber Co., Akron, O.
Report of Secretary-Treasurer, G. A. Renard.
"The Future of Industry," Leonard H. Swinbank, controller of purchases, Imperial Chemical Industries, Ltd., London, England.

LUNCHEON MEETINGS, 12:30 P. M.

Editors group and Financial group.

GENERAL CONVENTION SESSION, 1:30 P. M.

"Benefits To Purchasing Agents under the Code," Fred G. Space, purchasing agent, Seymour Mfg. Co., Seymour, Conn.
Discussion, led by Virgil D. Steiner, purchasing agent, Union Metal Mfg. Co., Canton, O.
"Handicaps to Purchasing Agents under the Code," Jos. W. Nickolson, purchasing agent, City of Milwaukee.
Discussion, led by George M. Tisdale, director of purchases, United States Rubber Co., New York.
"New Responsibilities of the Purchasing Job under the Code," Frank D. Bryant, assistant purchasing agent, Standard Oil Co. of California, San Francisco.
Discussion, led by H. C. Shafer, purchasing agent, Timken-Detroit Axle Co., Detroit.

DINNER MEETINGS, 6:30 P. M.

Editors, Educational, Government and Textile groups.
Iron and Steel Group:
Presiding, W. W. MacMillen, director of purchases, National Malleable & Steel Castings Co., Cleveland.
"The Iron and Steel Code," Walter S. Tower, executive secretary, American Iron and Steel institute, New York.
"The Steel Situation," Walter S. Doxsey, editor, *Daily Metal Trade*, Cleveland.
"Color Code for Marking Steel Bars," A. J. Copeland, Industrial Brownhoist Corp., Bay City, Mich.

### Tuesday, June 19

GENERAL CONVENTION SESSION, 9:00 A. M.

"Cost Determinations as They Affect Prices," Leon Henderson, director, Research and Planning division, NRA, Washington.
Discussion, led by George A. Neesham, purchasing agent, Wyckoff Drawn Steel Co., Chicago.
"Industry's New Sales Policies," Charles R. Stevenson, Stevenson, Jordan & Harrison, New York.
Discussion, led by W. E. Campbell, purchasing agent, Frigidaire Corp., Dayton, O.
"Research Children of the Depression," Dr. Harrison E. Howe, editor, *Industrial and Engineering Chemistry*, Washington.
Discussion, led by George L. Meyer, Jr., director of purchases, Stewart-Warner Corp., Chicago.

LUNCHEON MEETINGS, 12:30 P. M.

Chemical; Mining, Smelting and Refining; Publications; Public Utilities; Iron and Steel groups.

AFTERNOON MEETINGS

Container Buyers', Coal, Educational, Oil, Pulp and Paper, Public Utilities groups.

### Wednesday, June 20

GENERAL CONVENTION SESSION, 9:00 A. M.

"What Is NRA's Price Policy?" Dexter M. Keeser, executive director, Consumers Advisory board, NRA, Washington.
"NRA's Plans for Industry," Col. George S. Brady, deputy assistant administrator, NRA, Washington.
Discussion, led by L. F. Boffey, vice president, Union Towel & Linen Supply Co., Jersey City, N. J.
"NRA Must Consider the Buyer," Stuart F. Heinritz.
Discussion, led by E. T. Cushes, deputy administrator, NRA, Washington.

LUNCHEON MEETING, 12:30 P. M.

Committee on Purchasing Department Organization and Procedure, Lee J. Bussmann, purchasing agent, Bussmann Mfg. Co., St. Louis, presiding.
Lumber committee.

AFTERNOON, 1:00 P. M.

Golf and sightseeing trips.

ANNUAL BANQUET, 7:00 P. M.

Presiding, Walter Kirkman, president National Association of Purchasing Agents and Maryland State Purchasing Agent, Baltimore.
Toastmaster, Frank L. Kulow, director of purchases, Willard Storage Battery Co., Cleveland.
Presentation of medals and awards.
"Racketeering and Its Correction," Joseph B. Keenan, special assistant U. S. Attorney General.

### Thursday, June 21

GENERAL CONVENTION SESSION, 9:30 A. M.

Code Authority Representatives:
Steel, Coal, Lumber and Textiles.
Address, Dr. Louis H. Haney, professor of economics, New York university, New York.
Address, Leonard H. Swinbank, London, England.
Discussion, led by Louis A. Colton, director of purchases, Zellerbach Paper Co., San Francisco; Carl A. Ilgenfritz, director of purchases, Republic Steel Corp., Youngstown, O.; William E. Campbell, Dayton, O.; L. E. Boffey, New York; Russell Forbes, commissioner of purchases, City of New York; Walter N. Kirkman, Baltimore; and Howard T. Lewis, professor of Marketing, Harvard University Graduate School of Business Administration, Boston.
Adjournment

at dinner meetings Monday night. Walter S. Tower, executive secretary of the American Iron and Steel institute will address the iron and steel group at this time and will participate in the open forum discussion Thursday morning.

At luncheon on Tuesday the following groups are scheduled for meetings: Chemical and allied products; mining, smelting and refining; presidents and secretaries of purchasing agents chapters; and association publications. Tuesday afternoon these groups will meet: Paper shipping container buyers, coal committee, educational and institutional buyers, lumber, and public utilities.

A meeting of the important committee on purchasing department organization and procedure will be held at luncheon time Wednesday. Discussion will embrace the use of purchase contract clauses, code information record keeping and periodic analysis of purchasing department procedure to eliminate unnecessary operations.

The program brings a number of distinguished speakers to the convention. The principal address at the opening general session will be delivered by P. W. Litchfield, president, Goodyear Tire & Rubber Co. An international flavor to the meeting will be introduced by the address of Leonard H. Swinbank, controller of purchases, Imperial Chemical Industries, Ltd., London, England. Special Assistant U. S. Attorney General Joseph B. Keenan is the principal banquet speaker. Dr. Lewis H. Haney, professor of economics, New York university will address the forum Thursday morning. The accompanying program, which has been abridged to show only the features of particular interest to individuals in the iron, steel and metalworking industries, shows that many NRA administrators and advisors will appear before the convention.

The headquarters of the meeting is Hotel Cleveland where all sessions will be held, except the general convention sessions, which will be in the adjacent, air-conditioned Higbee auditorium. The annual banquet will be held in the Rainbow room of Hotel Carter.

Arrangements for the convention

(*Please turn to Page* 64)

# Display Steel, Nonferrous Metals and Packaging at 1934 Inform-a-Show

HALF a hundred exhibitors will participate in the 1934 Inform-a-Show, annual exposition held in conjunction with the international convention of the National Association of Purchasing Agents. The exhibits will be housed in the ball room, Red room, balcony and corridors of the mezzanine floor of Hotel Cleveland.

Show hours are 10:00 a.m. to 10:00 p.m., Monday and 9:00 a.m. to 6:00 p.m. on Tuesday, Wednesday and Thursday.

Producers, fabricators and jobbers of steel and nonferrous metals and their products are well represented, as are also the manufacturers of packing equipment, office machines and supplies.

The roster of exhibitors follows:

Acme Steel Co., Chicago—Steelstrap system of reinforcing boxes, crates, bundles and bales with tensioned steel bands, sealed and applied without nails.

Allyne-Ryan Co., Cleveland—Gray iron and semi-steel castings; Ryanite, a high strength, dense alloy with good machining qualities.

American Crayon Co., Sandusky, O.—Writing fluids, industrial chalks and crayons, adhesives.

American Steel & Wire Co., Chicago—Demonstrating the art of wire making. A wire drawing machine will be operated, drawing fine wire. Wire and wire products.

Astrup Co., Cleveland—Awnings.

American Brass Co., Waterbury, Conn.—Electro-sheet copper, beryllium copper, and brass, bronze, and copper alloys.

Autopoint Co., Chicago—Mechanical pencils and desk pads.

Bissett Steel Co., Cleveland—Steels for industry; tungsten carbide and tantalum carbide tools and drawing dies for wire, rod and tubing.

Burroughs Adding Machine Co., Detroit—Accounting machines, typewriters.

Bussman Mfg. Co., St. Louis—Electrical fuses.

Chase Brass & Copper Co., Waterbury, Conn.—Sheet, rod, wire and tubing of brass, copper, bronze and nickel silver.

Chicago Belting Co., Chicago—Leather belting and hydraulic packing.

Cleveland Cap Screw Co., Cleveland—Cap and set screws, carriage and machine bolts, nuts, etc.

Cleveland Container Co., Cleveland—Cores, tubes and containers for shipping; asbestos tubes, a new product.

Clipper Belt Lacer Co., Grand Rapids, Mich.—Belt lacers, belt hooks, belt cutters, card and pin cuters and connecting pins.

Continental Diamond Fibre Co., Newark, Del.—Fiber pipe and fittings; Haveg, a new acid resisting material.

Dixon Crucible Co., Joseph, Jersey City, N. J.—Pencils.

Eagle Pencil Co., New York—Pencils, erasers, steel and fountain pens.

Eberhard Faber Pencil Co., Brooklyn, N. Y.—Pencils, erasers, rubber bands.

Ediphone—Thomas A. Edison, Inc., Orange, N. J.—Office dictating machines.

Gaylord Inc., Robert, St. Louis—Corrugated and solid fiber shipping boxes.

General Electric Co., Schenectady, N. Y.—Mazda lamps, demonstrated by representatives of the Electrical Testing Laboratories, an independent testing organization employed by the General Electric Co.

Gerson-Stewart Corp., Cleveland—soaps, disinfectants, cleaners, floor finishes for industrial use.

Grinnell Co., Providence, R. I.—Cast iron and malleable pipe fittings; unit heaters.

Hankins Container Co., Cleveland—Shipping containers display boxes, corrugated novelties, etc.

Hinde & Dauch Paper Co., Sandusky, O.—Shipping boxes.

Hygrade Sylvania Corp., Salem, Mass.—Incandescent lamps.

Inland Container Corp., Indianapolis, Ind.—Corrugated fiber board shipping containers.

Jones & Laughlin Steel Corp., Pittsburgh—Jalcase steel, bessemer screw steel, shafting, cold rolled flats, wire, nails, staples, bars and shapes, tinplate, tubes, pipe, structural shapes, etc.

Joint merchandising committee of the mill supply industry—Charts, graphs and statistics showing the range of supplies in stock in the mill supply houses.

Lunkenheimer Co., Cincinnati—Valves, boiler mountings, lubricators, oils and grease cups.

National Screw & Mfg. Co., Cleveland—Cold upset and threaded products—bolts, screws, nuts, rivets, cotter pins, tacks, etc.

National Tube Co., Pittsburgh—Welded and seamless wrought tubular products; stainless and heat resisting pipe and tubes; boiler and condenser tubes; etc.

National Vulcanized Fiber Co., Wilmington, Del.—Fiber, phenolite, laminated bakelite and their products.

Pittsburgh Coal Co., Pittsburgh—Steam and gas coals for every industrial use.

Pittsburgh Steel Co., Pittsburgh—Chain link fence, huge-joint and stiff-stay fence, nails, wire, reinforcing fabric, pipe and tubes.

Raymond Mfg. Co., Corry, Pa.—Coil springs, flat springs, wire forms, small stampings from steel and nonferrous metals and alloys.

Reserve Lithograph & Printing Co., Cleveland—Checks, letterheads and folders illustrating bank and commercial color lithography.

Scovill Mfg. Co., Waterbury Conn.—Brass and nickel-silver sheets, rod and wire; brass tubing and pipe; copper tubing; cap and machine screws.

Signode Steel Strapping Co., Chicago—Tensional steel strapping, pail clasps, tag fasteners, lithographed seals.

Spaulding Fiber Co., Tonawanda, N. Y.—Genuine hard vulcanized fiber, laminated phenolic and insulating materials.

Standard Oil Co. of Ohio, Cleveland—Industrial lubricants and other petroleum products.

Standard Register Co., Dayton, O.—Business record keeping systems.

Stuart & Co. Ltd., D. A., Chicago—Oil products for drawing stainless and alloy steels, lubricating oils and greases.

Superior Foundry Co., Cleveland—Gray iron and semisteel castings.

Thomas Publishing Co., New York—Publications.

Toledo Scale Co., Toledo, O.—Parcel post scale, duplex and vibrator conveyor packaging machines; packaging machine equipped with "electric eye."

Walworth Co., South Boston, Mass.—Valves and fittings; pipe wrenches.

Youngstown Sheet & Tube Co., Youngstown, O.—Photographs in color showing steelmaking operations; three separate working models—two-high automatic sheet mill, drawing blocks on which wire will be drawn, and a butt weld tube mill.

# Production Statistics of Steel Code Members

HEREWITH are presented production and shipment statistics for all of 1933 and the first quarter of 1934 by members of the NRA steel code as compiled by the American Iron and Steel institute, New York, the steel code authority. Practically all producers are operating under the code.

In 1933 the total of steel products produced for sale, less shipments to members of the iron and steel code for conversion into code products, was 15,330,984 gross tons, equal to 33 per cent of finishing capacity. This tonnage represents 68.9 per cent of the ingots produced by the companies whose products are included. To this summary, 213 companies contributed their statistics of production and shipment.

For the first quarter of 1934 total production was 4,206,857 gross tons, equal to 36.6 per cent of finishing capacity. This tonnage was reported by 223 companies.

A wide spread is revealed in the first quarter between the percentage of capacity engaged in various products. It is noteworthy that the heavy finished lines, such as bars, plates and shapes, were secondary to the flat-rolled products and some specialties, some of this spread being due, of course, to the greater capacity of the heavy lines.

Sheet-making capacity, for example, was occupied 50.8 per cent during the first quarter. Hot-rolled strip mills operated at 49.9 per cent of capacity, and cold-rolling mills 45.4 per cent. Black plate was even higher at 61.5 per cent, and tin plate at 57.6 per cent. Sheet piling was another active line at 45.6 per cent.

Heavy structural shape capacity, on the other hand, was engaged only 16.9 per cent. Universal and sheared plates fared fractionally better at 17 per cent. Standard rail mills were a trifle higher at 17.6 per cent. First quarter operating rates of other products were: Bars, 24.1 per cent; drawn wire, 34.8; nails and staples, 22.8; seamless pipe and tubing, 20.1; track spikes, 17.3; car axles 15.4; splice bars and tie plates, 13.

| 1933 | | | | | | | | First Quarter 1934 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| Production for Sale | Per Cent of capacity | Shipments: Export | Shipments: To members of the Iron and Steel Code for conversion into Code products | | | Number of companies | Items | Annual Capacity Gross tons | Production for Sale | Per cent of capacity | Shipments: Export | Shipments: To members of the Iron and Steel Code for conversion into Code products |
| 3,129,772 | xxx | 2,480 | 2,875,807 | STEEL PRODUCTS | Ingots, blooms, billets, slabs, sheet bars, etc. | 40 | 1 | xxxxxxx | 854,064 | xxx | 1,531 | 783,625 |
| 874,547 | 16.0 | 19,595 | xxxxxxx | | Heavy structural shapes | 14 | 2 | 5,466,224 | 231,454 | 16.9 | 4,720 | - |
| 50,383 | 19.8 | 2,240 | xxxxxxx | | Steel piling | 5 | 3 | 270,000 | 30,754 | 45.6 | 495 | - |
| 916,340 | 16.6 | 18,021 | 20,828 | | Plates—Sheared and Universal | 26 | 4 | 5,513,563 | 233,870 | 17.0 | 6,774 | 592 |
| 281,758 | xxx | 19,722 | 210,322 | | Skelp | 9 | 5 | xxxxxxx | 51,614 | xxx | 3,454 | 37,673 |
| 344,206 | 7.1 | 35,218 | xxxxxxx | | Rails—Standard (over 60 lbs.) | 6 | 6 | 4,850,000 | 213,685 | 17.6 | 10,081 | - |
| 45,226 | 5.8 | 10,022 | xxxxxxx | | Light (60 lbs. and under) | 9 | 7 | 805,820 | 19,956 | 9.9 | 5,270 | - |
| 16,711 | 11.9 | 2,932 | xxxxxxx | | All other (Incl. girder, guard, etc.) | 2 | 8 | 140,000 | 5,963 | 17.0 | 2,262 | - |
| 175,546 | 10.7 | 10,310 | xxxxxxx | | Splice bar and tie plates | 21 | 9 | 1,659,707 | 53,930 | 13.0 | 3,859 | - |
| 1,930,554 | xxx | 20,503 | 203,814 | | Bars—Merchant | 50 | 10 | xxxxxxx | 458,998 | xxx | 10,117 | 40,575 |
| 364,923 | xxx | 4,289 | xxxxxxx | | Concrete reinforcing | 38 | 11 | xxxxxxx | 100,445 | xxx | 2,265 | - |
| 326,457 | xxx | 682 | xxxxxxx | | Cold finished—Carbon | 18 | 12 | xxxxxxx | 86,663 | xxx | 317 | - |
| 289,247 | xxx | 1,777 | 31,089 | | Alloy—Hot rolled | 15 | 13 | xxxxxxx | 116,687 | xxx | 821 | 6,962 |
| 27,014 | xxx | 59 | xxxxxxx | | —Cold finished | 13 | 14 | xxxxxxx | 10,353 | xxx | 29 | - |
| 71,962 | xxx | 713 | xxxxxxx | | Hoops and baling bands | 6 | 15 | xxxxxxx | 15,052 | xxx | 173 | - |
| 3,010,157 | 22.8 | 28,023 | 234,903 | | TOTAL BARS | 76 | 16 | 13,089,127 | 788,198 | 24.1 | 13,722 | 47,537 |
| 78,423 | xxx | - | 78,115 | | Tube rounds | 8 | 17 | xxxxxxx | 6,896 | xxx | 150 | 6,152 |
| 17,637 | 16.8 | 35 | xxxxxxx | | Tool steel bars (rolled and forged) | 18 | 18 | 107,850 | 6,931 | 25.7 | 71 | - |
| 466,454 | 24.4 | 27,624 | xxxxxxx | | Pipe and tube—B. W. | 16 | 19 | 1,913,928 | 88,879 | 18.6 | 10,023 | - |
| 194,498 | 11.2 | 12,945 | xxxxxxx | | L. W. | 11 | 20 | 1,740,069 | 52,625 | 12.1 | 6,742 | - |
| 70,913 | 8.4 | 121 | xxxxxxx | | Electric weld | 4 | 21 | 853,571 | 9,689 | 4.5 | 58 | - |
| 415,928 | 16.5 | 33,906 | xxxxxxx | | Seamless | 14 | 22 | 2,520,978 | 126,396 | 20.1 | 10,529 | - |
| 27,462 | 18.9 | 1,103 | xxxxxxx | | Conduit | 6 | 23 | 144,014 | 8,024 | 22.3 | 254 | - |
| 53,309 | 25.1 | 2,107 | xxxxxxx | | Mechanical Tubing | 5 | 24 | 212,050 | 14,333 | 27.0 | 602 | - |
| 442,880 | xxx | 20,590 | 197,812 | | Wire rods | 18 | 25 | xxxxxxx | 73,309 | xxx | 5,277 | 34,783 |
| 789,673 | 42.0 | 25,778 | 22,936 | | Wire—Drawn | 48 | 26 | 1,913,329 | 166,332 | 34.8 | 5,737 | 3,169 |
| 412,971 | 34.6 | 14,680 | xxxxxxx | | —Nails and staples | 27 | 27 | 1,176,961 | 67,232 | 22.8 | 3,026 | - |
| 405,971 | 26.5 | 31,641 | xxxxxxx | | —Barb., fence, bale ties, fence posts, etc. | 30 | 28 | 1,524,926 | 78,292 | 20.5 | 4,816 | - |
| 278,560 | 72.8 | 3,975 | 102,095 | | Black plate | 15 | 29 | 382,879 | 58,866 | 61.5 | 2,036 | 24,344 |
| 1,699,388 | 62.5 | 134,967 | xxxxxxx | | Tin plate | 17 | 30 | 2,669,551 | 384,725 | 57.6 | 72,773 | - |
| 415,075 | xxx | 6,743 | xxxxxxx | | Sheets—Hot rolled | 21 | 31 | xxxxxxx | 203,169 | xxx | 4,399 | 12,153 |
| 996,854 | xxx | 15,130 | 6,449 | | Hot rolled annealed | 27 | 32 | xxxxxxx | 274,735 | xxx | 8,005 | 560 |
| 633,354 | xxx | 60,580 | xxxxxxx | | Galvanized | 19 | 33 | xxxxxxx | 168,110 | xxx | 18,451 | - |
| 780,888 | xxx | 11,903 | xxxxxxx | | Cold rolled | 20 | 34 | xxxxxxx | 295,401 | xxx | 5,848 | - |
| 356,700 | xxx | 3,042 | xxxxxxx | | All other | 17 | 35 | xxxxxxx | 58,335 | xxx | 1,489 | - |
| 3,182,871 | 41.1 | 97,398 | 6,449 | | TOTAL SHEETS | 36 | 36 | 7,864,609 | 999,750 | 50.8 | 38,198 | 12,713 |
| 1,247,973 | 36.3 | 10,340 | 163,540 | | Strip—Hot rolled | 33 | 37 | 3,226,252 | 402,516 | 49.9 | 5,246 | 43,110 |
| 429,713 | 40.1 | 3,460 | xxxxxxx | | Cold rolled | 40 | 38 | 1,036,874 | 117,784 | 45.4 | 974 | - |
| 62,352 | 16.9 | 350 | xxxxxxx | | Wheels (car, rolled steel) | 5 | 39 | 368,658 | 15,821 | 17.2 | 60 | - |
| 61,243 | 11.2 | 534 | xxxxxxx | | Axles | 9 | 40 | 549,200 | 21,100 | 15.4 | 233 | - |
| 50,270 | 14.8 | 1,022 | xxxxxxx | | Track spikes | 14 | 41 | 348,544 | 15,097 | 17.3 | 261 | - |
| 10,156 | 67.2 | 1,800 | xxxxxxx | | All other | 6 | 42 | 21,707 | 2,470 | 45.5 | 500 | - |
| 19,243,791 | xxx | 572,939 | 3,912,807 | | TOTAL CODE STEEL PRODUCTS | 196 | 43 | xxxxxxx | 5,200,555 | xxx | 219,728 | 993,698 |
| xxxxxxx | 33.0 | xxxxxxx | xxxxxxx | | Estimated total steel finishing capacity based on a yield from ingots of 68.9 % | | 44 | 46,035,000 | xxxxxxx | 36.6 | xxxxx | xxxxxxx |
| 2,522,271 | xxx | 2,079 | 967,569 | | Pig iron, ferro manganese and spiegel | 31 | 45 | xxxxxxx | 740,529 | xxx | 655 | 193,462 |
| 178,329 | xxx | 1,967 | xxxxxxx | | Ingot moulds | 5 | 45 | xxxxxxx | 51,433 | xxx | 1,212 | - |
| 1,673 | 5.2 | 20 | xxxxxxx | IRON PRODUCTS | Plates | 3 | 47 | 32,260 | 349 | 4.3 | - | - |
| 1,110 | - | 106 | 1,004 | | Skelp | 1 | 48 | - | 835 | - | 357 | 478 |
| 38,561 | 17.1 | 10 | 896 | | Bars | 13 | 49 | 224,919 | 11,192 | 19.9 | 9 | 638 |
| 4,587 | 9.2 | - | xxxxxxx | | Splice bars and tie plates | 2 | 50 | 50,000 | 3,258 | 26.1 | - | - |
| 27,968 | 12.1 | 201 | xxxxxxx | | Pipe and tubes | 5 | 51 | 231,153 | 10,161 | 17.6 | 27 | - |
| 6,416 | 35.6 | 1 | xxxxxxx | | Sheets | 1 | 52 | 18,000 | 30 | .7 | - | - |
| 3,825 | 7.4 | - | xxxxxxx | | All other | 5 | 53 | 51,800 | 3,088 | 23.8 | - | - |
| 84,140 | 15.3 | 338 | 1,900 | | TOTAL IRON PRODUCTS (ITEMS 47 to 53) | 20 | 54 | 550,172 | 28,913 | 21.0 | 393 | 1,116 |

# EDITORIAL

## Purchasing Agents in Key Position on Price Policy

TO WHAT extent the NRA administration should modify the provisions for price control in codes of fair competition is an important question. How the new policy—once it is fairly established—shall be interpreted and administered is a delicate problem of equal moment to buyers and sellers.

A broad hint to the difficulties involved was afforded by the reaction to NRA's announcement on June 8 that its price policy would be modified. The administration was deluged with so many frantic queries, protests, and reports of threatened price cutting that it wisely withdrew its announcement and counseled code members to await further developments. This experience should indicate that the price problem must be dealt with calmly and intelligently, and with due consideration for those whose daily operations must be adjusted to any change in NRA policies.

Thus far it is difficult to determine how much the administration's decisions on price control have been influenced by the critical outbursts of theorists and how much by the reliable evidence of persons competent to weigh the experience afforded by 12 months of operation under existing codes. On the face of events of the past three months, one suspects that the move to revise the original policy was dictated and hastened more by the federal trade commission and Darrow reports than by evidence from more trustworthy witnesses.

### Industrial Buyers, Free of Taint and Bias, Guided in Opinion by Actual Experience

As for competency in dealing with price problems from the standpoint of consumers, probably no group is better qualified than the National Association of Purchasing Agents. Opportunely, its nineteenth annual international convention, meeting in Cleveland this week, will deal with many phases of purchasing under the price provisions of industrial codes of fair competition.

The discussion of the subject by purchasing agents should yield an excellent presentation of the consumer's case. Untainted by the bureaucratic jealousy of the federal trade commission, the premeditated bias of Darrow and the impractical viewpoint of many of the academic critics of codes, the purchasing agents can speak from actual experience. Moreover, their pride of profession, which has been fostered so effectively by their successful national association, will enable them to co-ordinate faithful service to their employers with the highest ethics of purchasing. Again, their judgment is tempered by their knowledge that their companies, while seeking fair treatment as buyers under the codes of their suppliers, at the same time are interested in protecting their interest as sellers in the codes of their own industry.

This dual rule of industrial companies challenges the integrity of management and points to the very crux of the entire problem of self-government in industry. When you observe a president who urges his sales manager to plug up every hole in his industry code against price demoralization at the same time he asks his purchasing agent to find a way to evade the provisions of his suppliers' codes, you are face to face with the basic problem of competition.

### Equitable Balance of Conflicting Factors Can Best Be Reached by Practical Minds

The solution lies not in what theorists advocate, nor what the federal trade commission or Darrow prescribes, but in what enlightened, honest industrial management, through judgment born of experience, determines to be an equitable balance between a myriad of conflicting factors. A price artificially sustained at too high a level automatically chills demand; one abandoned to the ravages of uncontrolled competition spells disaster. A price permitted to fluctuate to the free law of supply and demand while codes prescribe fixed hours and wages is unfair. One pegged to the costs of the low-cost producer penalizes small shops and specialists; one synchronized to the high-cost plant encourages inefficiency, promotes excessive profits for some and penalizes consumers.

The play and weight of these various factors are better known to the men on the firing line of industry than to the administrators and advisers in Washington. For this reason the counsel of purchasing agents should reflect the interest of consumers generally more accurately than that of theorists, politicians and others who claim so vociferously to be protecting the public interest.

All industry will do well to follow the discussions on buying under code provisions in this nineteenth meeting of the National Association of Purchasing Agents. Its members have an unparalleled opportunity to throw needed light upon a difficult problem.

# THE BUSINESS TREND

## Removal of Uncertainties Should Help Sentiment

AT THIS writing it would seem that in a week or 10 days some of the factors which have been obscuring the trend of business will be out of the way. Even so, an accurate size-up of the outlook for the third quarter may not be possible until the dog days are nearly spent.

The first uncertainty to be cleared up will be that of legislation. Congress has remained in session longer than was expected, and as adjournment approached, speculation as to which bills would be passed and which would be jettisoned increased to high pitch. Realization that some of the obnoxious bills are out of the way will help business confidence considerably.

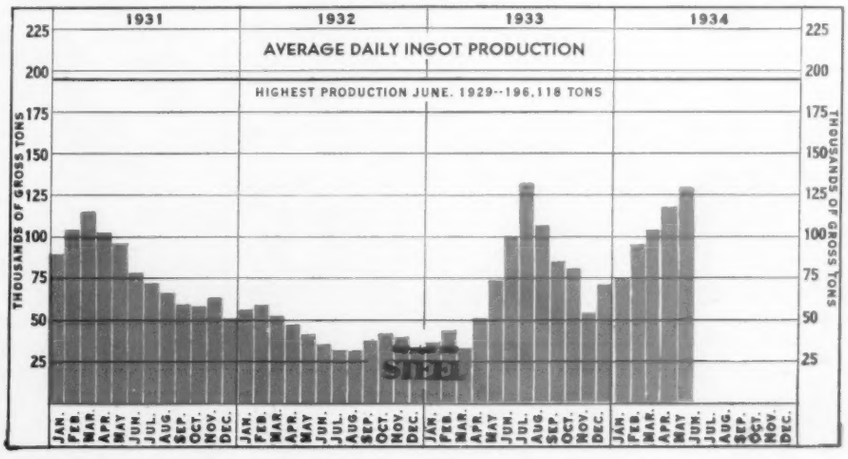
Whether the threatened steel strike occurs or is averted, the certain knowledge that it is either "on" or "off" will be infinitely better for business than the present uncertainty.

Assuming that these factors—congress and strikes—are off the stage by July 1, attention then probably will shift to the price policy in NRA administration. Unless this delicate problem is handled intelligently, it may breed uncertainty and confusion as demoralizing to business recovery as was the ambiguity of the collective bargaining clause of NRA.

### Barometers Continue To Show Business Is Resisting Seasonal Summer Recession

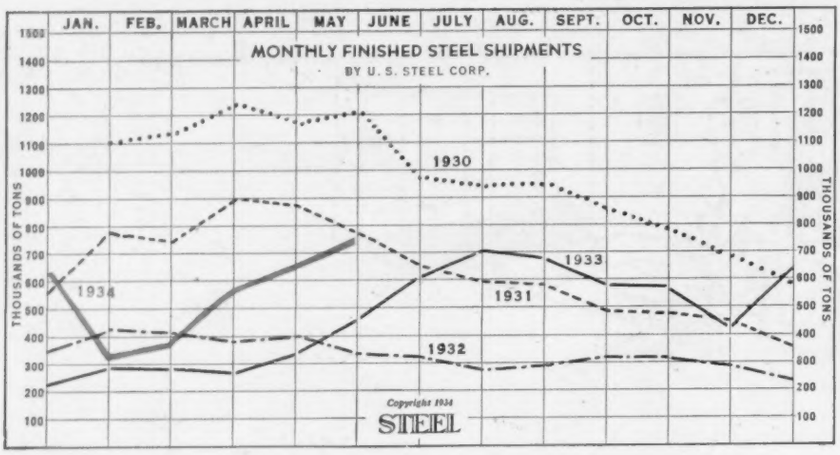
Remembering that industrial activity has been maintained at an encouraging level during four months of constant legislative baiting and sniping from professional labor unions, one would expect that it would gain new strength through the elimination of these enemies, even though lesser foes continue to assail it. The weekly records of business still fail to reflect marked recessions, although signs of a slight slackening of pace are visible in some lines. Car loadings for the week ending June 9 are expected to rebound to 625,000 from the low level of the previous week, which included Memorial day. Electric power output in the week ending June 9 advanced moderately over that of the previous week.

Comparisons of current figures with the corresponding records for 1933 continue favorable, in spite of the fact that June, 1933, was near the peak of the "inflation" business spurt.




| 1934 | Tons |
|---|---|
| May | 125,807 |
| April | 117,425 |
| March | 103,600 |
| Feb. | 92,147 |
| Jan. | 73,959 |

| 1933 | Tons |
|---|---|
| May | 74,148 |
| April | 54,514 |
| March | 33,699 |
| Feb. | 45,286 |
| Jan. | 39,618 |



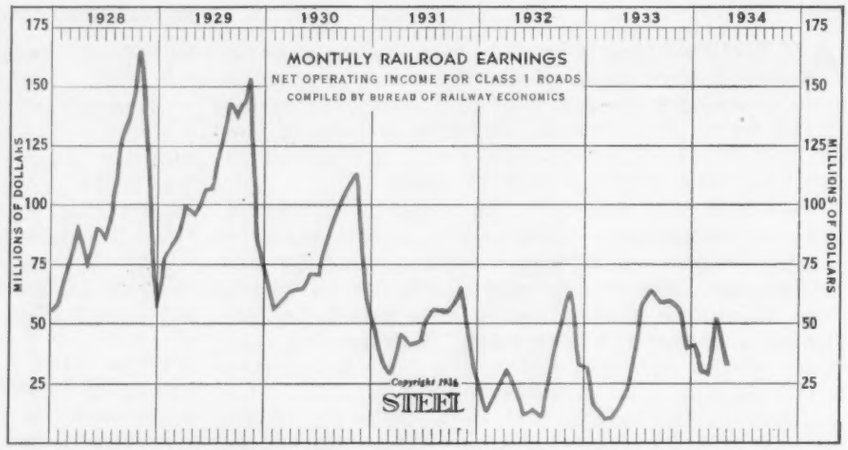

| | Tons |
|---|---|
| May, 1934 | 745,063 |
| April, 1934 | 643,009 |
| May, 1933 | 455,302 |

### Finished Steel Shipments Up Sharply in May

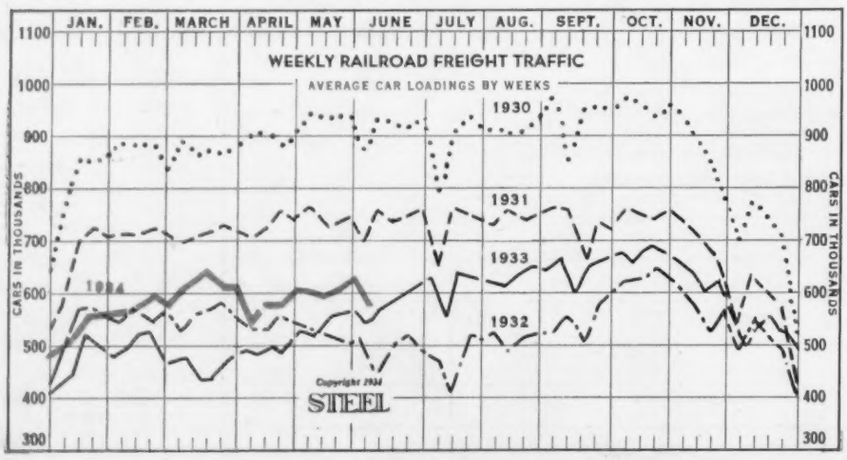
Shipments of finished steel products by the United States Steel Corp. advanced for the fourth successive month in May, according to the monthly report of the Corporation. Total shipments in May were 745,063 tons, an increase of 102,054 tons compared with the movement of 643,009 tons in the preceding month. The shipments during May were the largest since May, 1931. Shipments in May, 1933 totaled 455,302 tons, in 1932, 338,202 tons, in 1931, 764,178 tons and in May, 1930, 1,203,916 tons.

### Railroad Earnings Gain Over Year Ago

The net railway operating income of the class 1 railroads in April amounted to $32,264,609, which was at the annual rate of return of 1.88 per cent on their property investment, according to reports filed by the carriers with the Bureau of Railway Economics. This is a sharp reduction when compared with the $52,037,848 earned in the preceding month but shows a marked improvement over the $19,351,462 earned in April, 1933. Earnings thus far in 1934 total $144,546,047.



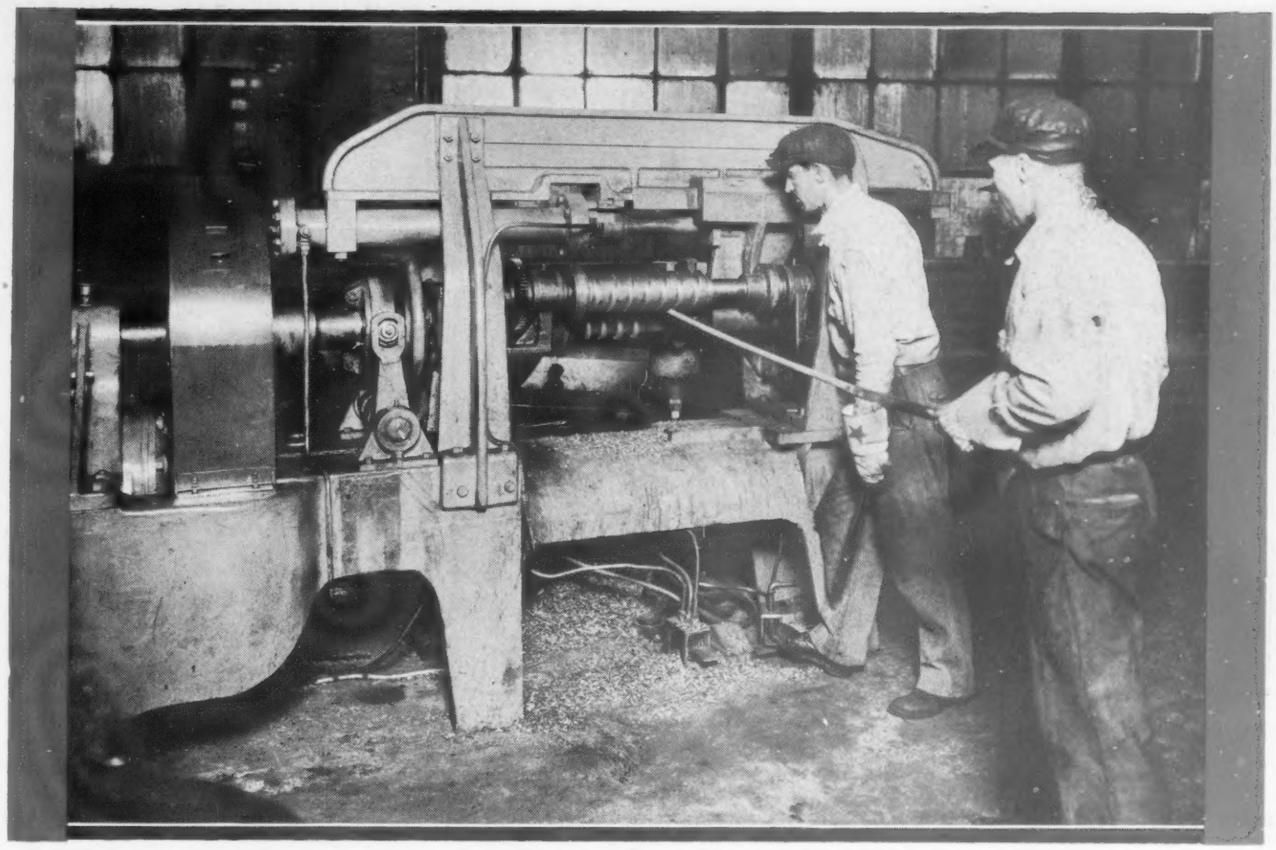

| | |
|---|---|
| April, 1934 | $32,264,609 |
| March, 1934 | 52,037,848 |
| April, 1933 | 19,351,462 |




| | 1934 | 1933 |
|---|---|---|
| June 2 | 578,541 | 512,974 |
| May 26 | 624,567 | 545,551 |
| May 19 | 611,142 | 535,719 |

### Freight Car Loadings Decline; Top Year Ago

Loading of revenue freight in the week ending June 2 totaled 578,541 cars; a decrease of 46,026 cars under the preceding week but an increase of 65,567 over the corresponding week in 1933, according to the weekly report of the American Railway association. The total for the week, which included Decoration day, was a reduction of 8 per cent below the preceding week, a greater than seasonal decline when compared with corresponding weeks over a period of the past 15 years.



*The heated alloy steel rod is coiled on a mandrel in this machine, a lead screw guiding the stock as it is drawn into the machine. This view shows a Buick coil spring being formed*

# MANUFACTURING "KNEE-ACTION" SPRING SUSPENSIONS

BY A. H. ALLEN
Associate Editor, STEEL

ADOPTION of independent springing systems by the automotive industry, in addition to providing greater riding comfort and a potent argument for sales of new cars, has meant increased opportunities for suppliers of new equipment and materials used in the manufacture of these units. Production lines have been rearranged to accommodate assembly and installation of this new suspension, and departments once devoted entirely to the handling of leaf spring assemblies have been expanded or altered to include necessary operations for the manufacture of coil springs and their accessory parts.

Several different types of independent springing are in vogue at the moment. Two leading designs are exemplified on the "knee action" cars built by companies aligned with the General Motors Corp. Chevrolet and Pontiac feature the enclosed type; Cadillac, LaSalle, Buick and Oldsmobile use the open or "wishbone" type.

The former type is mounted between the wheel and the kingpin on which it turns with the wheel in steering. This design, which gives the advantage of stabilized steering connections (neither the tie-rod nor the drag link partaking of the up and down movement of the wheels), however, is not suitable for use on heavier cars, which would require a spring unit of so much weight that steering would become heavy and logy. On heavier cars, therefore, the open system is used with spring and upper and lower support arms mounted on the frame, the arms carrying a vertical yoke which in turn carries the kingpin.

New equipment for manufacturing these units covers a wide range. Precision centerless grinders for sizing spring coil rods before forming; tapering rolls for flattening one end of the

*Coils are heated at* 1610 *degrees Fahr. and quenched in oil in this machine which is provided with fixtures which clamp the spring securely*

spring rod to make it lie flat against the coil; rod heating furnaces; special forming machines for coiling the rods; quenching machines for multiple clamping and quenching the hot formed coils; grinders for smoothing the ends of the coils; welding machines for joining the two halves of the stamped housing used in the enclosed system; special forging equipment for forming linkages, arms, levers and other parts; furnaces for heat treating spring coils; conveyors for handling the various parts during assembly; and a wide range of testing equipment to check accuracy and quality of the spring coils, are only a few of the essential machines required in this new work.

New materials involve chiefly alloy steels, characterized by high strength and toughness. Coils in both enclosed and open types are of silicomanganese steel, S.A.E. 9260. Approximate analysis is: Carbon, 0.55 to 0.60; manganese, 0.60 to 0.90; silicon, 1.80 to 2.20; sulphur, 0.50 maximum; and phosphorus 0.40 per cent maximum. Tensile strength is about 190,000 pounds per square inch; elastic limit, 175,000 to 190,000 pounds per square inch.

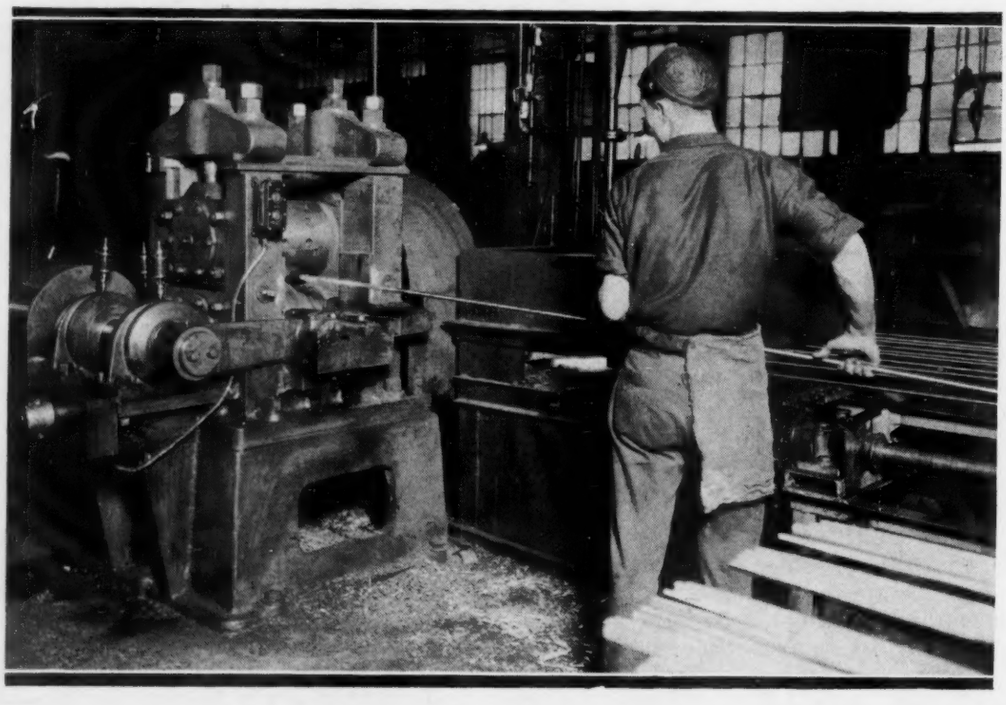
This steel has been demonstrated to have high fatigue strength. Brinell hardness in the finished material ranges from 415 to 475. According to L. A. Danse, metallurgist of the Cadillac Motor Car Co., Detroit, silicomanganese steel is admittedly dirty from the standpoint of nonmetallic inclusions, but it has proved to be the best grade so far tested for use in coils. It was first selected because of the good results obtained from its use in leaf springs. Steelmakers at present are active in attempting to sell the merits of other alloy steels for this purpose, such as silicovanadium and the like.

### Choose Steel for Safety

Incidentally, the aim in the Cadillac suspension system, as well as in other parts of the car, is to provide steels which will bend rather than break. No attempt is made to effect saving in weight if it is necessary to sacrifice toughness and ductility. Safety of passengers is the guide in selection and heat treatment of steel.

Other steels used in independent springing assemblies include S.A.E. 1340, used in arms for the open-type suspension; S.A.E. 4140, used in threaded yokes; chrome-nickel (not stainless) steel, used in Chevrolet kingpin support yokes, steering knuckles, support arms and radius rods; nickel-molydenum steel, used in the short support levers for the enclosed units; and screw stock, used in certain pins.

The theory behind the introduction



*BEFORE coiling, the ends of the rods are heated, and pointed or flattened in this roll, to form a flat bearing surface at each end of the spring after it is coiled. Heating furnace is shown immediately in front of the operator*

of independent springing was to develop a softer ride on the front of the car, to match the soft ride obtainable with present rear springs. It was found possible to produce front springs of the leaf type which would have the desired softness, but by so doing, strength and stability of the front end were sacrificed. Use of individual coil spring, with suitable mounting arrangement and elimination of the front axle, provided the desired riding quality and gave an assembly as strong or even stronger than the conventional design, according to J. M. Crawford, chief engineer, Chevrolet Motor Co.

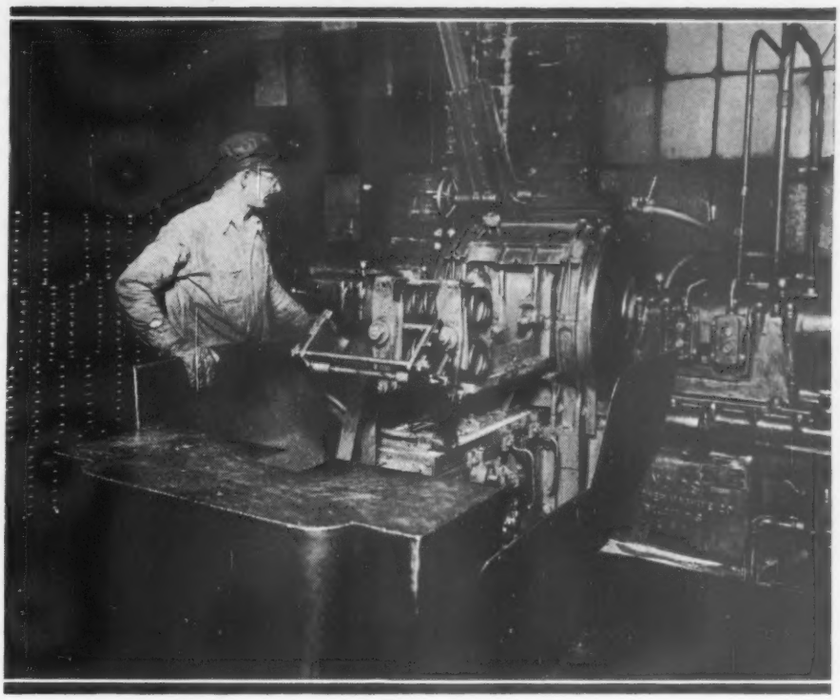
**No Strength Sacrificed**

Mr. Crawford points out in this connection that in the conventional construction, the front wheel is mounted on a spindle attached to the front axle by the steering knuckle, kingpin and kingpin yoke. The knee-action unit is attached directly to the chassis frame by the same type of knuckle, pin and yoke; and the wheel is mounted on the same type of spindle, which is attached to the knee-action unit by a strong drop-forged support arm, further braced by a drop-forged radius rod. The new steering knuckle is stronger than the old type, and other parts are claimed to be even stronger than the knuckle.

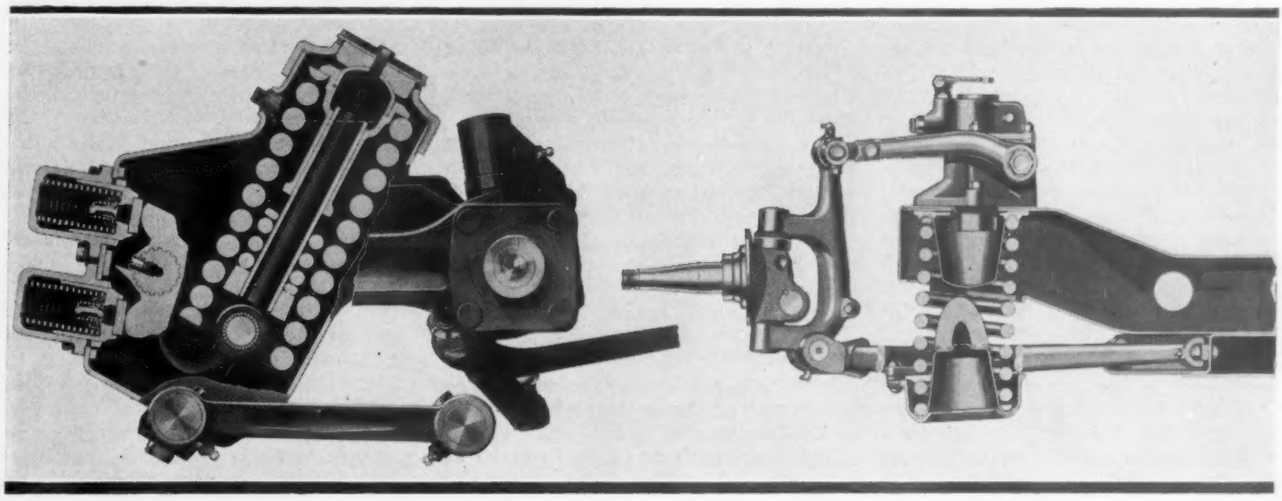
The question has been asked: Isn't independent springing more complicated and therefore more likely to cause trouble? Chevrolet engineers point out that the enclosed knee-action unit is no more complicated than a hydraulic shock absorber and, moreover, each unit eliminates seven spring leaves, the spring eye, the shackle and the separate shock absorber with its lever, connecting links, attachments and bushings. Furthermore, it eliminates from the steering connections all wear (except that caused by steering), since the drag link and tie rod are not subjected to motion caused by spring action.

Independent springing was developed years ago in Europe, where the need was felt earlier than in this country, and is now in use on British and continental cars, among them being Lancia, Mathis, Mercedes, Darracq, Brennabor, Delage, Mercedes-Benz, Alvis and Crossley. No European car that has adopted front-wheel suspension has ever reverted to the old system. General Motors engineers, led in particular by work of Maurice Olley, Cadillac special problems engineer, had designed independent springing systems over three years ago; their introduction was deferred until the time was considered ripe for merchandising the development.

Coil springs for the Cadillac suspension are supplied partly by the Railway Steel-Spring Co., New York, and partly by the Buick plant in Flint, Mich. Summarizing the steps in their manufacture, stock is received in rod form 155 inches long. First operation is centerless grinding the rods to within plus or minus 0.002-inch on the ¾-inch diameter. As shown in an accompanying illustration, the coils are supported at the lower end by a steel spring seat to which rubber has been vulcanized.



*This machine grinds simultaneously both ends of two coils which are clamped firmly at right angles to the face of the grinding wheels*



*CROSS-SECTION (side view) of the "knee-action" unit used in Chevrolet cars is shown at the left. The housing is kept filled with lubricant to the level shown by the dotted line. At the right is a section through the Cadillac suspension unit, the left front wheel, viewed from the rear. Spring seat for the coil has a layer of rubber vulcanized to it*

So that the coils seat squarely, the coil rods before forming, are heated about 15 inches at either end and passed through a tapering roll which flattens out and tapers the ends. The rods are then placed in a continuous furnace and heated to 1560 degrees Fahr.—a temperature selected for minimum formation of scale.

When heated, the rods are transferred to the coiling machines, an operator guiding the rod over the coiling mandrel, where the end is locked by a revolving arbor. A second operator guides the other end of the stock with a special handling tool. The mandrel rotates in synchronism with a deeply cut spiral lead screw, the latter guiding the stock along the mandrel as it is being coiled. The mandrel is tapered about 1/32-inch to facilitate removal of the coil, which is done automatically.

The coils then are transferred to a conveyor-type furnace and heated to 1600 degrees Fahr. for 37-45 minutes, held at full heat for 8-12 minutes and quenched for 75 seconds in oil held at 110 degrees Fahr. A special type of revolving quenching machine is used which clamps the coils at each end and holds the sides rigidly to prevent any distortion. Oil is fed under pressure into the center of the coil, quenching from the inside to the outside.

**Minimum of Decarburization**

The coils are drawn at 875 degrees Fahr. for one hour, and then quenched in water. Decarburization must be held under 0.010-inch, according to Cadillac specifications; on some coils it has ranged as high as 0.025-inch, these being rejected. Each coil is brinelled on one end as a check on hardness, which as mentioned previously, must be within the limits of 3.00 to 2.80 millimeters, diameter of impression, or 415 to 478 brinell hardness number.

The coils are given a rustproofing treatment in chemical solutions, followed by enameling and baking. They are then assembled into the "wishbone" unit and adjusted for installation in the car. Testing involves compressing solid and releasing, measuring the free height which must be kept within close limits. Rate of the spring also is measured, that is, the force required to compress it one inch. This figure usually falls within the range 400-590 pounds, measured at the spring. The important factor in this check upon spring rate is the ratio of normal spring load to the rate of the spring at the point of normal load. This involves a figure for deflection which is obtained from measurements of the spring rate.

The rate is measured by mounting the complete car on four platform scales and pulling it down to normal load position with the wheels resting on the scales. By pulling the car down and pushing it back up again through a range of 3 or 4 inches either side of the normal load position and measuring deflections from the scales to a mark on each fender, it is possible to obtain a true load-deflection diagram for the suspension as a whole including the tires.

A special fatigue testing machine has been set up by Cadillac to check on chances of spring breakage. This is an oscillating testing machine comprising two standard lower wishbones operated by a motor, flywheel and cam arrangement and alternately compressing a pair of springs which rest on a stationary block between them. This tests the springs through full working range under exactly the conditions of use. The machine operates at 150 cycles per minute at maximum deflection. Tests have shown as high as 200,000 cycles before failure, said to be twice the life of leaf springs.

Coil springs for Buick models are manufactured similarly, although size of the rod stock varies somewhat. For the Buick 50 series, diameter is 43/64-inch; length 133 inches. For the 60 series, diameter is 45/64-inch; length 137 inches. For the 90 series, diameter is 23/32-inch; length 136 inches. After forming and heat treatment, the springs are clamped horizontally in a special grinding machine and the ends ground flat simultaneously. Installation and testing are similar to the Cadillac practice.

*(This is the first of two articles dealing with materials, methods and equipment used in the manufacture of independent springing systems for General Motors Corp. automobiles. The second will appear in next week's issue of* STEEL.)

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# Steel in Sound-Absorbent Tile

A SUBSTANTIAL tonnage of perforated metal is consumed annually in the production of sound-absorbent tile. Even during the past three years, when building has undergone such a sharp decline, tonnage has been fairly sustained, because of the expanding application of sound-absorbent material to such construction as has come out. In short, there has been continued advancement in acoustical science which has placed it, along with air conditioning, light diffusion and other comfort and efficiency imparting elements, among the requirements of modern construction.

Except for relatively few purposes, in which aluminum or composition material is used, sound absorbent tile has a perforated steel facing. It is this that often goes to make up the general surface of the ceiling and walls of a room. One of the best known types, a patented type sponsored by Johns-Manville Sales Corp., New York, calls for 26-gage tin plate, with perforations 0.068 inches in diameter and numbering about 32 to the square inch.

The tin plate is baked enameled, with cream the standard color, although others may be had. With due alowance for up-turned margins, the size of the tin plate conforms with the width and length dimensions of the unit. These dimensions are standard at 12 x 12, 16 x 16 and 12 x 24 inches.

The sound-absorbent element is rockwool, which is encased, back and sides, in asbestos paper and with the surface exposed to the metal, covered with muslin. However, additional steel is required. Formed steel strips separate the perforated metal from the rockwool pad, and copper-bearing steel tee bars, formed from sheet metal and secured to the surface being treated, hold the tile into place by spring snap construction.

**Also Made in 12-Foot Lengths**

Another form of this sound-absorbent construction calls for 24-gage copper bearing steel sheets with 3/32-inch perforations. These sheets are made of two panels, each 11 inches wide, and extending in lengths up to 12 feet. Between each panel is a triangular-shaped rib, 1½ inches deep, running the longitudinal dimensions of the sheets. The edges of the sheets are formed into special sections, providing a shelf for the sound-absorbent element, a self-leveling device that makes it impossible for the sheets to get out of alignment, and a connection for end hangers when conditions require these hangers for the support of the structure.

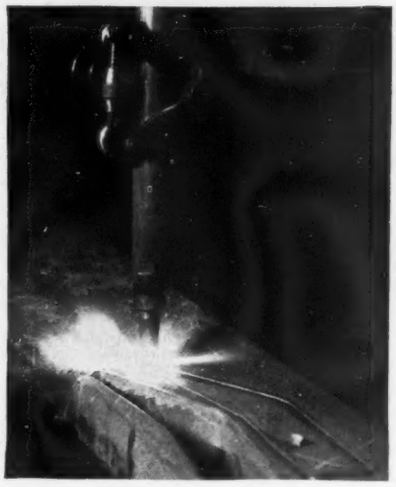
In addition to the shelves along the ledges, clips at the center rib furnish support for the sound-absorbent element, which is a rigid block, composed of rockwool and a fire-resistant binder. A half-inch space is allowed between the rockwool and the perforated metal facing. Fastening of the construction to the treated surface is usually faciliated by the use of angles or channels.

Where this latter type is used for roofing, a light-weight copper-bearing deck plate is used, either 18 or 20 gage depending upon purlin spacing. The metal is fabricated into units 18⅛ inches wide by lengths depending upon the requirement of the installation, with the triangular-shaped ribs, which are 1½ inches deep and 1-inch wide, spaced on 6-inch centers. Prior to forming, the flat metal sheets are perforated with 3/32-inch diameter holes on 5/16 and 7/16-inch centers.

The roof unit is a combination in one unit of the light roof deck, a sound-absorbing facing, a heat insulation and a weatherproof exterior.

"WE ORDER EVERYTHING FOR OXWELDING AND CUTTING FROM LINDE"

# *Linde Process Service*



• *Pinion gears, connecting links, reach blocks, pall levers and dipper teeth are shape-cut from strong alloy steels in routine operations. These dipper teeth are being accurately formed from alloy steel stock.*

## WIDENS USEFULNESS OF OXY-ACETYLENE MACHINE CUTTING

RECENTLY a power shovel manufacturer reported how Linde Process Service helped perfect a series of complicated flame-cutting operations:

"We started to use oxy-acetylene shape-cutting several years ago—at first, only for dipper teeth. Later we used it on many other parts for which the strength of rolled or forged steel was desirable.

"On these parts oxy-acetylene cutting proved so profitable that we asked Linde to help us develop accurate shape-cutting of our heaviest parts from slabs and ingots.

"Linde Service Operators assisted in organizing this heavy cutting and advised on preheating procedures for special strong alloy steels. They supplied data on most efficient oxygen pressures, nozzle sizes, and cutting speeds.

"Now, we have replaced nine machines with two shape-cutting machines. We are cutting heavy steel to tolerances of 1/32-in. and less. We shape-cut parts accurately from steel 20 in. thick. Angle corners and curved cuts are simple for us."

By translating proved methods into terms of actual plant requirements Linde Process Service helped organize these shape-cutting operations for greatest speed, economy and dependability. It can probably help you in similar work. Ask the nearest Linde Sales Office to show you how.

LINDE OXYGEN
...plants and warehouses in all industrial centers.
PREST-O-LITE ACETYLENE
...the standard for well over a quarter of a century.
UNION CARBIDE
...sold in the familiar Blue and Grey drum from over 250 warehouse stocks.

**OXWELD APPARATUS AND SUPPLIES**—Oxweld offers the maximum value in oxy-acetylene equipment. Blowpipes, regulators, acetylene generators, welding rods, and supplies—are available for every welding and cutting operation. Complete stocks and service stations are located in all principal cities.

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# Tests for Air Furnace Bung Brick Are Developed

AN ECONOMICAL method of determining accurately which of the available types of fireclay brick is most satisfactory to air furnace operation is desirable and helpful to the foundryman operating that type of melting unit. With that fact in mind, the General Refractories Co., Philadelphia, laid out an elaborate testing program some years ago, which used the available laboratory spalling tests; called for the development of new laboratory tests, if necessary; and included extensive work in the field. Preliminary reports from the field showed the available laboratory tests unreliable and a new test, more closely simulating service conditions, was devised and tried. While generally satisfactory, that test proved more expensive than actual service tests, so that laboratory procedures were discarded and the program carried on and completed in the field.

These field tests were made on a conventional air furnace having 150 square feet of hearth and melting one 22-25-ton heat a day. The furnace is fired with powdered coal through two circular burner openings and heats are melted down at the rate of about 3 tons an hour. The bungs, when laid up, are about forty 2⅞-inch courses wide (parallel to the width of the furnace) and 31 inches deep (parallel to the length of the furnace). The front edge of the first or No. 1 charging bung, which is nearest the burner, is 36 inches from the burner wall. Four consecutive bungs are removed singly for charging.

During the testing program the testing bungs are removed about 1 hour after the heat is tapped and allowed to rest on the floor another hour while the furnace is charged. When the charging is completed the bungs are placed on the furnace, usually resting lightly on the conical peak of the charge, where they remain until the furnace again is lighted.

### Four Ways To Compare Brick

Under these typical operating conditions, four methods are available by which the operator can compare the quality of a new bung brick with that of the type regularly used. The best method, of course, is that which gives the operator maximum dependable information with a minimum of tests, ties up the least number of bung frames and requires minimum attention of the furnace man. The four methods are as follows:

No. 1. Purchase outright a sufficient number of new brick to maintain bungs over a period of several months. Then by checking the costs resulting from using the new brick with the costs produced by the brick normally in use, a decision can be made as to the quality of the new brick.

No. 2. Build complete bung frames of the test brick and compare with complete frames of the regularly employed type.

No. 3. Construct one half of the frame, parallel to the furnace width, of the test brick and the other half of the regular brand.

No. 4. Build a frame having alternate panels, across the furnace, of new and regular brick.

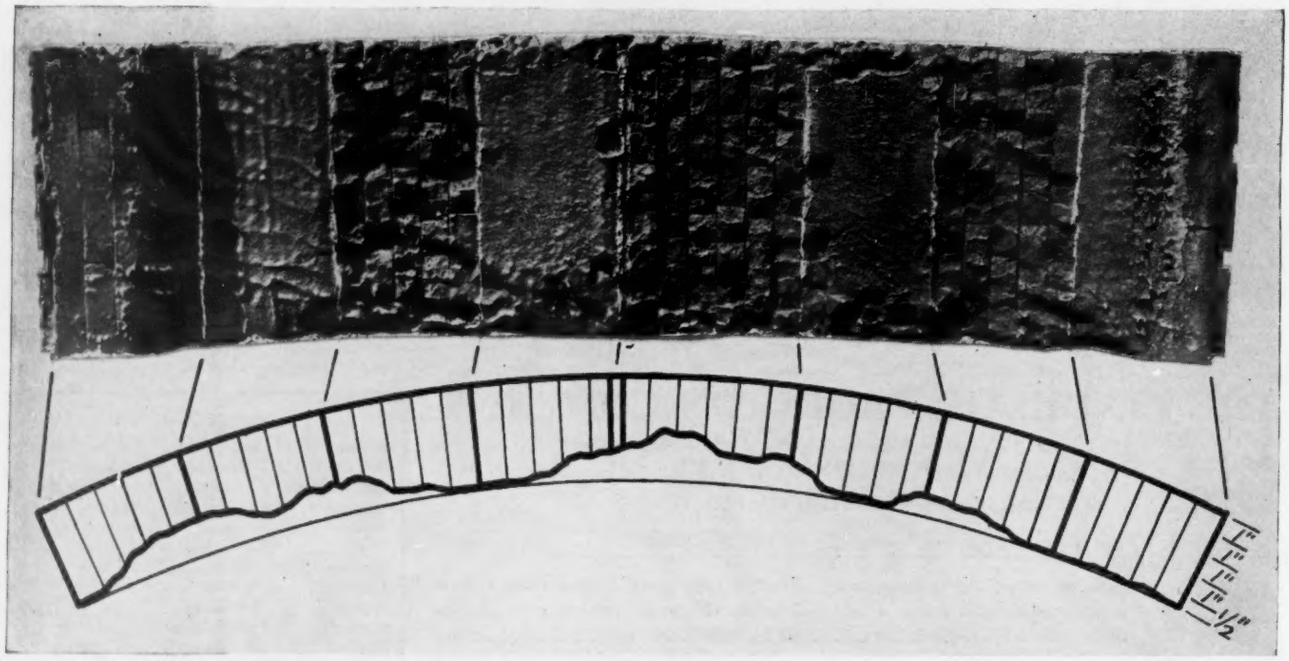
### Requires Considerable Time

The first method seldom is used since it incurs risk of financial loss and also requires a great amount of time. The second method requires less time and fewer brick, but the ultimate results not always are dependable. The main objection to the method is that no two bung frames, and hence neither of the two types of bricks under test are the same distance from the burner. Since practically all spalling occurs when the furnace is lighted off, it is obvious that the location of the bung frame in relation to the burner has considerable bearing on the test.

The third method is not entirely satisfactory as the service conditions across the entire width of the furnace are not uniform. This may be due to an increase in thermal shock on one side of the bung or a variation in erosion or melting which may occur when the flame is deflected by the charge or faulty burner arrangement.

The fourth method is best because

(*Please turn to Page* 46)




*Arrangement of alternate panels in recommended service test of two types of air furnace bung brick*

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# Making the Most *of* METHODS AND MATERIALS

## Uses Nickel Steel in Gears For Outboard Motors

Because outboard boat motors often are operated by persons not mechanically inclined, these engines must be built tough, rugged and foolproof. To afford long trouble-free life, the gears and similar vital parts must be designed as light and compact as is practicable to deliver the required power, which demands the use of steel with a high strength-to-weight ratio. All gears in motors built by one manufacturer are forged from 3.50 per cent nickel steel approximating S. A. E. 2345, with the carbon content held to a 5-point range (0.45 to 0.50 per cent). It is specified that the steel be cold melted in electric furnaces, and that the grain size rating be No. 5 or finer. Heat treatment comprises normalizing at 1675 degrees Fahr., quenching in oil from 1425 to 1475 degrees, and tempering to show an ultimate tensile strength of 220,000 pounds per square inch and a yield point of 205,000 pounds.

$ $ $

## Damping Effect of Cast Iron Valuable in Machinery

One important feature of cast iron over steel is the damping effect, or the ability to absorb vibration. The value of damping capacity in machines and machine tools is obvious. Perhaps it is not so commonly realized that the effective strength of a vibrating part may be much greater if made with a material of high damping capacity and only fair strength than if made of a much stronger material of low damping capacity—the latter allowing vibrations to build up to serious intensity while the former will "damp" them out. The acoustic properties are related closely to the damping capacity since the duration of sound from a vibrating body is that portion of the damping graph which registers on the ear.

$ $ $

## New Conduit Embodies Ball Bearing Interior Surface

A new type of steel conduit which provides a ball-bearing surface designed to reduce greatly the friction arising in pulling a wire or wires through it has been developed by a maker of electric resistance welded tubing. The inside of this new conduit is processed prior to forming and welding so that the entire surface is covered with small, round, raised knobs which give it what the manufacturer refers to as a ball-bearing surface. It is claimed by the manufacturer that this type of contact surface reduces the surface friction 30 per cent, and, in addition, requires less time and cuts down jamming in the pulling of cables. Incidentally, this conduit can be installed without threading. It cuts and bends easily.

$ $ $

## Welds in Galvanized Parts Protected by Sprayed Zinc

Galvanized pipe, plate and sheets may now be welded and welds regalvanized by spraying with zinc with full assurance of an equal or greater life than the adjacent dip galvanized surfaces. In one case, a heavy galvanized 12-inch diameter pipe was used at all ocean water crossings in a 100-mile natural gas line installed in 1932 by a large public utility. The welds were sprayed 0.010-inch thick with ⅛-inch zinc wire in less

*EARTH MOVER CARRIES 40 TONS OF ROCK IN ONE LOAD: Several of these new buggies, built of arc welded steel and mounted on eight 20-inch wide pneumatic tires, are in use hauling rock and earth in the construction of the San Francisco-Oakland bay bridge. Overall length of one unit is 23 feet, body width 10 feet, weight empty 8 tons. Bodies are entirely of high tensile strength steel. Unloading is accomplished by sliding rather than lifting the loads off the carrying bed. The power takeoff which operates the sliding bed, as well as all other parts of the buggy are welded steel. Built by R. G. LeTourneau Inc., Stockton, Calif., welding work was done with electrodes and welding generators supplied by the Lincoln Electric Co., Cleveland*

than 10 minutes per weld, including sand blasting and set-up. Inspectors continue to report no corrosion evident. Many similar applications are being made on welded galvanized tanks and culverts, but if only for atmospheric corrosion 0.003 to 0.005-inch coating is sufficient. If subject to salt or ocean atmosphere, zinc gives best results; for normal atmospheric corrosion, aluminum is satisfactory.

\$ \$ \$

Thickness of the cupola lining is an important factor in influencing refractory costs. A heavy lining acts as an insulator, raising the mean temperature of the lining and causing greater damage. A maximum thickness of 9 inches has been recommended for the cupola lining.

\$ \$ \$

A 3-ton nickel cast iron lead melting pot still is in service after 11 months, whereas plain cast iron pots failed in approximately 6 months. The nickel cast iron pot analyzed showed total carbon 3.20, silicon 1.25, nickel 2.50 and chromium 0.50 per cent.

\$ \$ \$

For hollow forged high-pressure steam drums, chemical reaction chambers and oil cracking vessels working at elevated temperatures and high pressures, a nickel-chromium-molybdenum steel is recommended by a British steelmaker.

\$ \$ \$

One electric furnace operator recently installed a water-cooled roof on the unit and found that the life of the refractory was increased and the power input decreased. Tests showed the amount of heat taken away by the water was less than that conducted through the roof in the unit not water cooled.

## Treated Ferroalloy Reduces Gassing of Welding Rods

In the June issue of *Foote-Prints*, published by the Foote Mineral Co. Inc., Philadelphia, L. B. Bliss of the research department of the Foote company presents an original article on "Welding Rod Coatings," in which the theory of gassing is discussed in detail.

Mr. Bliss states that it is believed that the ferroalloys contain a portion of their carbon as carbides which in the presence of water react to form acetylene gas, as follows:

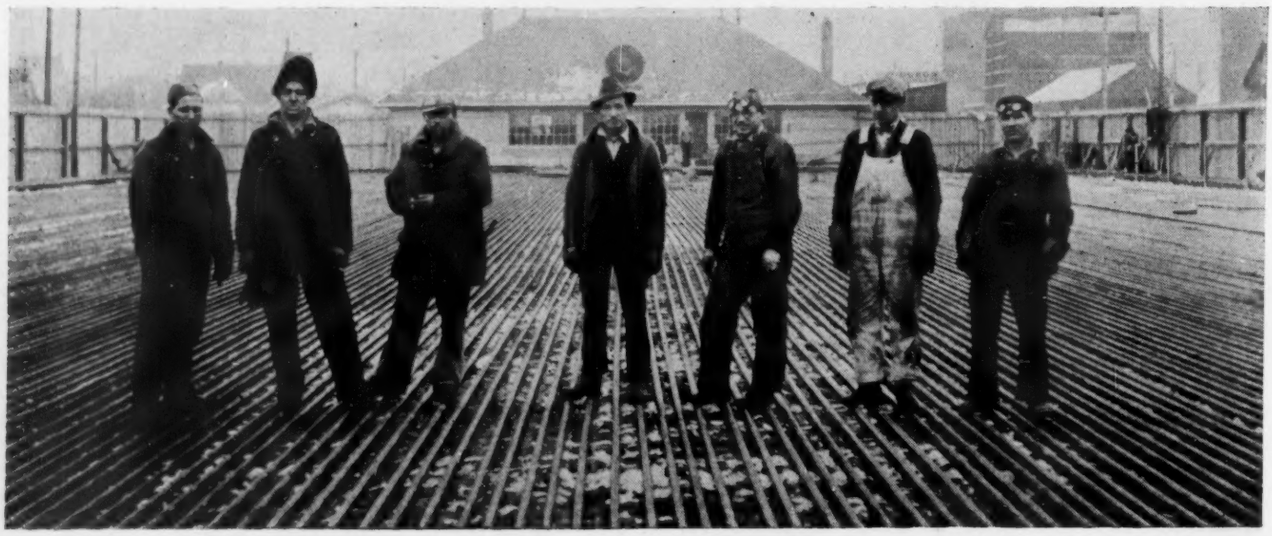
$$2xC + 2H_2O \longrightarrow C_2H_2 + 2xOH$$

where "x" represents the cation. It is not to be assumed that the whole quantity of gas evolved is acetylene, as undoubtedly some is obtained by de-adsorption of air from the surface of the individual particles as they become wetted in the batch.

"Many manufacturers of welding rods have found that by increasing the size of the particle they have been able to reduce gassing to a minimum, but unfortunately as the size of the particle of the ferroalloy increases, the stability of the suspensoid decreases, and the difficulty in keeping a uniform batch mounts tremendously. On the other hand, if the size of the particle is very small (conducive to the formation of a stable suspension), the surface exposed is greatly increased, and the reaction of the water with the carbide is facilitated. In addition, the coating on the rod may peel and crack, necessitating the addition of some material (such as a 40 x 80 mesh manganese dioxide) as a grog. Experience also tells us that as the mesh size is changed to reduce gassing and increase suspendability, the color of the coating is also changed, a characteristic to be avoided in practice, not from a practical or chemical viewpoint, but from a psychological one.

"A product has been developed recently that seems to be the answer to many of the above mentioned difficulties. Ferromanganese, the ferroalloy most commonly used, is processed in such a way that the troublesome carbides are rendered inert. The development of such a processed ferroalloy which will resist oxidation as well as the action of sodium silicate solutions, water, and various other liquid binders will allow the coating batch to be saved from day to day, eliminating that unnecessary waste at the end of each job."

Mr. Bliss describes a laboratory apparatus for measuring the gassing quantities of treated and standard ferromanganese. Tests with this apparatus indicate that nine times the volume of gas is evolved from standard ferromanganese as is evolved from non-gassing ferromanganese when the test is carried out at 30 degrees Cent. for three days. The article also deals with the stability of arcs, and with fluxes for welding aluminum. An appendix contains a selected list of European and American patents on welding rods, coatings and fluxes issued during the past few years.



*ARC WELDS 11 MILES OF PIPE: In constructing the new Spokane ice arena, General Machinery Co., Spokane, Wash., employed arc welding to lay 11 miles of 1¼-inch pipe in an area 100 x 250 feet, this figure not including 900 feet of 8-inch main. The company used a 300-ampere General Electric welding set and G-E Type W-20 welding electrodes. Tests with 150 pounds of air, after completion of the welding, showed but two leaks, which were closed in 20 minutes*

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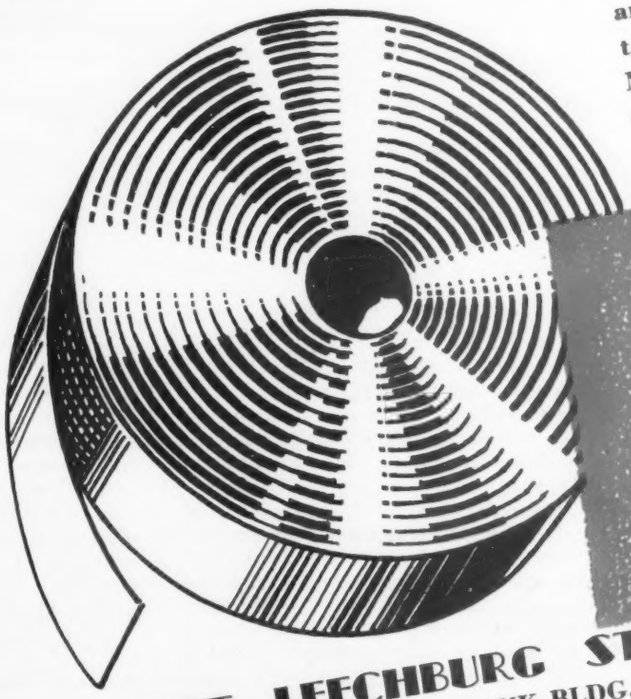

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# British Institute Conducts Annual Meeting in London

BY VINCENT DELPORT
European Manager, STEEL

A WIDE range of subjects, including blast furnace practice, blast furnace refractories, physical properties of cast iron, defects in tin plate, corrosion research and manufacture of full-finished steel sheets, were discussed extensively at the annual meeting of the British Iron and Steel institute in London, May 31-June 1.

It was announced that His Majesty the King had accepted the Bessemer gold medal, thus following precedent established by Queen Victoria and King Edward VII. The Carnegie gold medal for 1933 was awarded to Brynmor Jones and the Williams prize for 1933 to A. Robinson and D. F. Marshall.

President W. R. Lysaght reviewed his recent travels in Australia and South Africa and mentioned that the steelworks of the Broken Hill in Australia should be considered as one of the finest in the world. The concern is able to produce pig iron at under £2 a ton at the rate of 8000 tons a week, and in addition it manufactures a large tonnage of steel products.

The Australian Iron & Steel Co., until recently restricted to production of pig iron and manufacture of pipe, now is also making steel. In South Africa, the Pretoria works also are modern and are in a position to produce pig iron at a cost barely exceeding £2 a ton. It is to be expected that before long the Australian works will be in a position to manufacture sufficient iron and steel for the requirements of the dominion, and may even have a surplus to export to New Zealand, while the Pretoria works should produce enough to meet the requirements in heavy material of the Transvaal.

### Scan Ore Characteristics

One session was devoted to the blast furnace plant. In a paper, "An Experimental Inquiry Into the Interactions of Gases and Ore in the Blast Furnace," by William A. Bone, H. L. Saunders and N. Calvert, Imperial College of Science and Technology, London, the authors described a simple apparatus and experimental methods by which it is possible to ascertain certain characteristics which an ore presents to each of the two main reactions occurring in the blast furnace. A second paper, Part IV of the same inquiry, dealt with equilibria and velocities in ore reduction and was prepared by William A. Bone, H. L. Saunders and J. E. Rushbrooke.

Both these papers were discussed together. Fred Clements, referred to a point emphasized by Prof. Bone relative to the slowing down of reactions similar to those occurring in the blast furnace between 750 and 850 degrees Cent. This phenomenon was investigated in laboratory tests, and Mr. Clements stated that many factors may intervene in actual blast furnace practice.

### Transfer Experiments to Furnace

Mr. Clements explained attempts made to see if experiments along the same line could be carried out in the actual blast furnace. A hole was drilled through the wall of the furnace in a zone where a temperature of 850 degrees Cent. was expected; through that hole was inserted a long tube which contained two other tubes, one for carrying water and the other for obtaining samples of gases and solids. The zone where the hole was drilled had a temperature of 1150 degrees Cent., but the experiment showed that notwithstanding numerous difficulties a complete survey of conditions in the blast furnace was possible.

R. A. Hacking showed slides indicating that the ordinary boiler tube used in the experiment described by Mr. Clements had suffered little externally from remaining several days in the furnace, where the temperature sometimes must have reached over 1200 degrees Cent. He pointed out that certain reactions take place in the blast furnace which are not foreseen in theory; these are endothermic reactions which steal a number of the heat units required to obtain iron and slag at the correct fluidity. He stated that samples of gases taken in the high temperature zone showed that these reactions probably are due to some unreduced oxides resulting from the state of the ore.

Another speaker referred to work done in Germany, in which the size of the ore has been taken into account. It was found that as the size of the ore is decreased, reduction of the ore increases up to a certain size, after which reduction remains stable. A. Hutchinson, vice president of the institute, said he considered the work presented in these papers, and also in the first report of the blast furnace practice subcommittee and in the report on blast furnace linings as classical.

In course of discussion, the suggestion was made that as a result of the work presented before the institute a method might be derived which would make it possible the better to evaluate iron ores from the point of view of their characteristics for blast furnace practice. The question was put whether carbon impregnation would occur right through the ore in the blast furnace as it does in the samples used in laboratory experiments. It was suggested that experiments should be continued on different varieties of ores from the point of view of size, density, permeability, etc. Dr. McCance referred to work done in the United States by Emmett and Schultz, which showed the cause of certain discrepancies in static experiments made on the water-gas reaction which Dr. McCance had himself noticed. He suggested that as the water-gas reaction can be used with considerable precision, it should serve as a check on other experimental methods.

Another speaker indicated economies which have been realized in production costs relative to certain furnaces during a period of ten years. He emphasized that much of this economy is the result of research work carried out over a period of years by various investigators. The speaker suggested organization of a central station which would evaluate ores by the delicate apparatus required.

### Practice Data Revealed

The first report of the blast furnace practice subcommittee was presented by G. H. Johnson, chairman of the sub-committee. This report, compiled from answers to a questionnaire, contains statistical data and tables relating to actual blast furnace practice. It is divided into three parts; Foundry practice, basic practice, and hematite practice. In discussion, it was pointed out that as shown from answers relating to various furnaces there appeared to be a certain number of anomalies in blast furnace practice that could very usefully be investigated; for instance, why should two furnaces having the same coke consumption show wide differences in amount of slag produced? It was suggested also that the study of coke consumption could be usefully effected under three headings: (1) Coke delivered to the plant before screening; (2) actual coke consumption; and (3) economic consumption, taking into account the benefit derived from the use of blast furnace and stove gases used in other parts of the works. It was stated by one speaker that it is not advisable

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to blow a number of furnaces from a common main, at least insofar as hot blast is concerned.

A report on blast furnace linings, prepared by the blast furnace refractories research joint committee of the British Refractories Research association and the National Federation of Iron and Steel Manufacturers was presented by A. T. Green, Stoke-on-Trent. In discussion it was stated that linings have been studied by the refractories department of Sheffield university. The result of investigations shows that in latter years, manufacturers of blast furnace linings in Great Briain have modified their practice considerably; instead of using large blocks, the practice now is to use small machine-made blocks. These give very small joints and lower permeability, and they can be heated much harder than was the case in previous practice. It was pointed out that actual length of service should be disregarded in favor of the consideration of the maximum output per life of a lining. It was also pointed out that in the United States standard size machine-made blocks are used for the hearth which give very long life. From the cost point of view, the true element is the cost per ton of the iron produced with a given lining.

### Room for Improvement in Bricks

H. E. Wright suggested that investigations should be made on the power of bricks to absorb water by capillary action. One speaker questioned whether alumina or silica bricks are most suitable for the hearth and the zone, and stated that in Great Britain there appears to be no certainty about the matter. He emphasized the point that the primary cause of many lining failures is due to the joints. The chief area of wear was said to be between a line about 35 feet above and a line about 25 feet below the tuyeres, and the life of this zone is the life of the furnace. Nowadays the life of a lining is prolonged by cooling, but the results would be still better if bricks could be still further improved.

J. G. Pearce, director and secretary of the British Cast Iron Research association, Birmingham, presented a paper on "The Elasticity, Deflection and Resilience of Cast Iron," in which he explained that the deflection in transverse tests of gray and malleable cast iron comprises two components, elastic deflection and plastic deflection, or permanent set. The separation of these components shows that the former is usually a straight line directly proportional to the load and differing relatively little from iron to iron, while the latter increases at a much greater rate than the load, and exhibits wide variations in magnitude between different irons.

W. E. Hoare, London, read a paper on the tin-iron alloy in tin plate. The author investigated the structure of the compound layer occurring in commercial tin plates, the compound being $FeSn_2$. Certain defects in commercial tin plate of prime quality have been classified as "normal pores," that is, those having the properties of true pores immediately the plate leaves the tinning machine, and "potential pores," that is, those tending to become true pores during the forming of the sheets into commercial articles. The following defects have been noted and their nature investigated: Normal pores, blisters, mottle, dry patches, grease lines, and isolated $FeSn_2$ crystallites.

J. McNaughton said that in trade practice the method used for grading tin plates is visual, but there are also invisible defects which show when the plates are under corrosive conditions. He emphasized the fact that considerable growth occurs in the compound layer crystals at high temperatures, and this is important in connection with such processes as lacquering, soldering, etc. Another speaker pointed out that tests had been carried out on the protection afforded by the compound layer, and it was found that this layer is porous. These findings were obtained by the use of the hot water test, which is considered to be a precise test.

The second report of the corrosion committee was introduced by Dr. W. H. Hatfield, director, Brown-Firth Research Laboratories, Sheffield, and chairman of the committee. Corrosion tests on samples exposed to atmospheric conditions and immersed in sea water were conducted at stations located in various parts of the world, and, in addition, a number of observations were made respecting corrosion on ships' hulls, steel railroad sleepers, etc.

### Further Studies Suggested

Considerable appreciation was expressed by users of steel following presentation of the report. A representative of the shipbuilding industry raised a point with respect to the use of steel or iron rivets, and suggested that investigation be made with a view to ascertaining whether one material was to be recommended in preference to the other. He also suggested that investigations should be made with regard to corrosion when plates or members are welded.

W. E. W. Millington, London, Midland and Scottish Railway Co., referred to corrosion occurring in locomotive boilers, and explained how the tubes appear to corrode more particularly at certain points. He also stated that at certain parts of the boilers where cracks occur, these cracks have been gouged and then filled with steel by means of electric welding, and he asserted that after ten years' experience, in no case has corrosion occurred again after this treatment.

T. H. Turner, London and North-Eastern Railway Co., referring to protective painting, emphasized that a red lead coating is fundamental. Referring to the corrosion of steel sleepers, he stated that it is not so much the loss of weight that worries railwaymen, but the fatigue stresses under the rails. He explained that in Germany, damaged sleepers are cut, and then the undamaged parts are welded up in order to constitute new sleepers. Referring to corrosion in boiler tubes, he said that a great deal depends upon the flow of the water, and, furthermore, that one of the main causes of corrosion in locomotive boilers is due to salts in the water, this being shown by observation, since certain locomotives running in certain parts of the country show little corrosion, whereas others show considerable corrosion.

It was remarked that it does not appear that additions of small proportions of copper, chromium or other metals give noncorrosive steels; it is only when comparatively large amounts of additions are made that noncorrosive properties definitely show themselves, and the addition of such amounts has an unfavorable bearing on cost. A speaker mentioned that he had tried metal spraying under the members of bridges on which a considerable amount of shunting was done, but found that zinc failed; at present, trials are being made with sprayed aluminum.

### Many Causes for Ship Corrosion

Another member, representing a shipbuilding company, emphasized the complexity of the factors intervening in the corrosion of ships' hulls. He mentioned that on one vessel alone where observations had been made, at least six different causes of corrosion had been suggested. He laid stress on the danger of making connections between copper-bearing sheets and mild steel sheets or members, owing to electrolytic action; in such cases the corrosion is thrown on to the mild steel. Referring to the recognized importance of scale as a protective on rolled steel, he believed that in many cases the scale should be taken off, because in the course of use it is hardly possible to keep it intact.

F. Bainbridge described a small and simple apparatus which he has used for the past four years for effecting tests by the intermittent dipping method. E. H. Saniter, vice president of the institute, suggested that researches should be made on steels containing a comparatively large percentage of sulphur or other impurities.

Col. N. T. Belaiew referred to the mention made in the report of Russian sheet iron. He stated that a few years ago some roofing sheets had been taken from some buildings, and although those sheets had been laid down in the reign of Catherine the Great, they were found to have stood the service

(*Please turn to Page* 64)

—Photo courtesy Independent Pneumatic Tool Co., Chicago

*Pneumatic chipping hammers being used to remove fins and gates from cast draft gears for railroad cars. Manufacture of such hammers requires annually over 100 tons of alloy steel*

# LARGE USES OF STEEL IN SMALL WAYS

263rd Article ◆ Chipping Hammers

PNEUMATIC chipping hammers provide a valuable tool for the steel producer, foundry, structural and various types of metalworking shops in removing metal pieces or sections more quickly than could be accomplished by a chisel and hand hammer. This equipment is used extensively in steel plants for removing seams and imperfections from billets and other semifinished material before the latter are rolled into the finished product. Foundries employ chipping hammers to clean castings of gates and risers and to smooth rough spots; this operation in some instances makes further machining unnecessary. The above illustration shows workers with pneumatic hammers chipping fins and gates from cast draft gears used on railroad cars.

Chipping hammers operate by air pressure at high speed, the tool producing from about 2000 to more than 3000 blows per minute, depending on the size and design of the hammer. This severe service demands rugged construction and alloy steel is used largely in the manufacture of the equipment. It is estimated that more than 100 tons of alloy steel is consumed annually in the production of chipping hammers, this being principally in the form of bars and forgings. The hammer handle is an alloy steel forging, most of the other parts being fabricated of alloy bar stock. The chipping tool itself is made of tool steel.

Hammers are furnished in different sizes for various classes of service. Popular types weigh from 10½ to 13½ pounds and vary approximately from 11 to 15 inches in overall length, the latter being determined by the length of stroke of the plunger. The stroke may range from 1 to 4 inches. Different designs of handles and trigger arrangements also are available, according to requirements.

### Scaling Hammers Lighter

For a lighter type of similar service scaling hammers are employed, these finding application in shipyards and in other industries where chipping work can be accomplished with lighter and less powerful equipment. Scaling and chipping hammers are alike in appearance, the former being smaller and weighing less than the latter. Riveting hammers also resemble chipping hammers in design and operation and involve alloy steels in their manufacture. A large variety of other tools employing compressed air for their operation comprise an important market for high-grade steels. These include paving breakers, rock drills, wrenches, grinders, rammers, hoists and similar equipment.

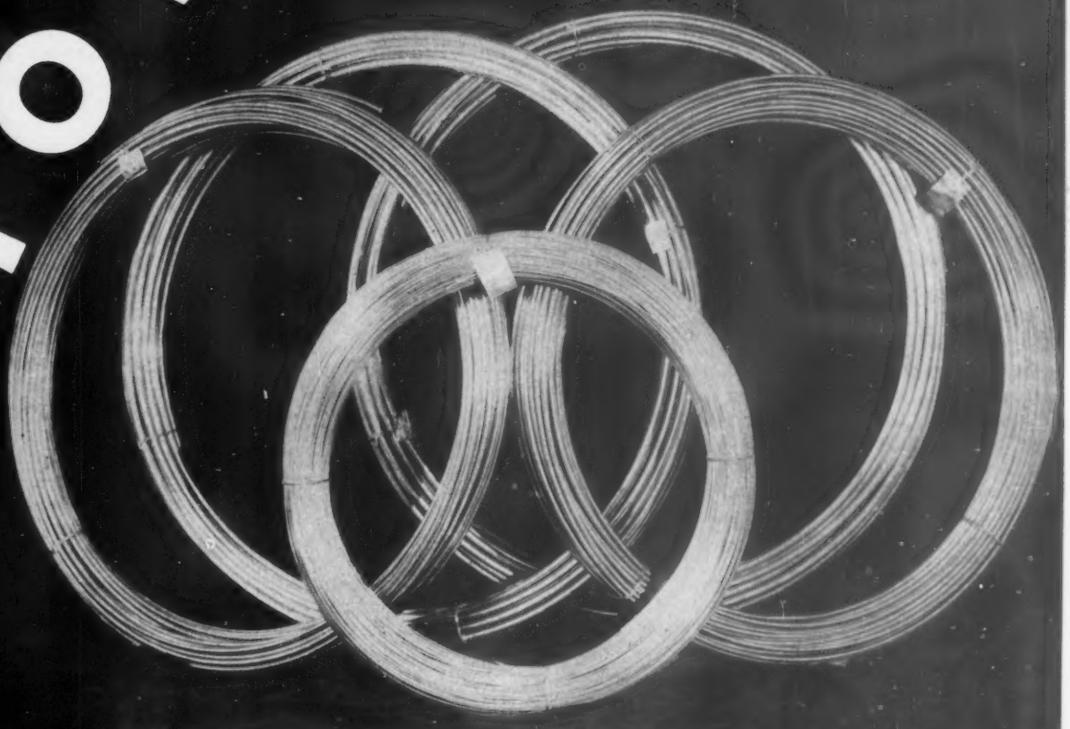
## Tests for Air Furnace Bung Brick Are Developed

(*Concluded from Page* 36)

it requires fewer test brick, subjects the test brick to more uniform service conditions, and any differences between the two tests can be seen at a glance. However, the size of the panel is important. A test was made comparing two different brands of brick, using panels of four 2⅞-inch courses in width. While the results were fairly satisfactory, the panels were too narrow, allowing the failure of one panel to affect adversely the bricks in the adjoining panel and vice versa. Accordingly the width of the panels was increased to five 2⅞-inch courses, as shown in the accompanying illustration, appearing on Page 36.

The fourth method of testing accommodates standard practice as most air furnaces are of such a width that eight 5-course panels can be installed across the bung. The bungs used in the test described are 31 inches deep, which is greater than those ordinarily used. The more common practice of laying up frames 13½ inches deep, using the standard 13½-inch, No. 105 bung brick, affords an opportunity of scattering test frames well along the charging section of the furnace. One hundred test bricks used according to method 4 are sufficient for the construction of four or five test bungs and a comparison of two different brands of brick.

YOUNGSTOWN WIRE



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TEMPERATURES up to 1900 degrees Fahr. are withstood by a new and improved insulating block which is bonded with asbestos fiber. The new product, which has low density and high insulation value, is adapted to the insulation of high-temperature boiler furnaces, open hearths, hot blast stoves and various types of high-temperature metallurgical furnaces.

♦ ♦ ♦

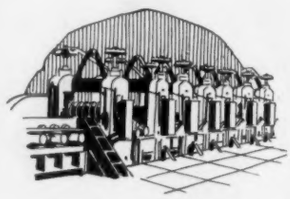
Marked resistance to weathering and strongly adherent to steel are advantages claimed for an improved synthetic resin recently marketed for the protection of steel commodities. The new product, it is said, will remain clear and free from peeling when used on metal surfaces.

♦ ♦ ♦

Precision merchant bar mills, which effect the hot rolling of rounds with aproximately the same variations in diameter and shape as now are obtained by the cold drawing process, are coming into greater favor. A single stand of precision rolls is installed directly ahead of the last stand of the finishing train, its drive being synchronized with the main mill.

♦ ♦ ♦

Individually-fired alloy tubes arranged on the interior sidewalls but with their intake and exhaust ends on the exterior are incorporated in the design of a new furnace for annealing steel sheets. Each tube is fired with a gas burner located at the bottom, the fuel being burned inside the tube and exhausted into the atmosphere at the top. Heat is transferred from the tube to the sheets by radiation. The furnace consists of two parts, a base upon which the material to be annealed is piled, and the bell. Controlling the cooling cycle is possible by using the tubes as cooling mediums. Temperature depreciation of 50 degrees an hour can be obtained by blowing air through the combustion tubes, or by cutting off the gas and air the charge can be cooled by its own radiation from 8 to 10 degrees an hour. Advantages claimed for the new annealing furnace include positive control of heating and cooling cycles and heat distribution, shorter heating cycles, elimination of box and tray, positive sealing and low fuel costs.



ECONOMY of operation is claimed for recently improved composition roll neck bearings. On a finishing stand of an 18-inch sheet bar mill over 100,000 tons of steel has been put through the rolls equipped with fabric bearings, compared to about 5000 tons with metallic bearings.

♦ ♦ ♦

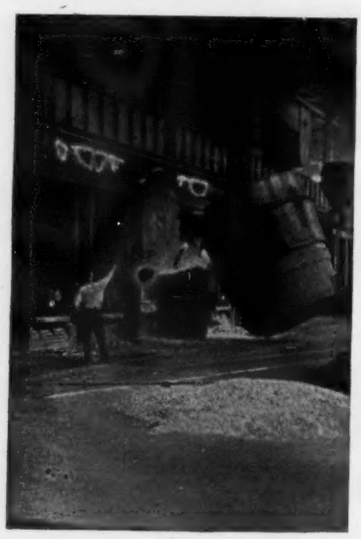
In the reduction of steel strip the increase of friction between roll and strip always causes an increase of resistance to deformation, of widening and of energy required for rolling, according to tests conducted abroad on plain carbon and silicon alloy steels.

♦ ♦ ♦

Hot-rolled strip, wire rods and bars subjected to a recently devised process of abrasive cleaning can be cold rolled or drawn in one pass to a high finish. Grit is carried in suspension and at high velocity through a scouring chamber by low-pressure compressed air. The interior of this chamber is designed to cause a wavy action in the air stream, thus resulting in numerous scouring effects through the entire length of the chamber and on the surfaces of the steel in transit through the machine. Grit automatically is returned to the supply hopper for further service; dust is removed from the exhaust chamber to a dust arrester.

♦ ♦ ♦

Increased tonnage has been secured by a producer of sheets and tin plate by equipping the mills with a recently marketed roll polisher which is automatic and self-cleaning. The unit includes a set of cylindrical revolving abrasive polishing rolls each of which rides on two slowly rotating, created cleaning rolls, thus allowing the polishing rolls to turn in the same direction as the mill rolls but at a much slower speed. This set up a polishing action and at the same time keeps the polishing wheels clean and free of glaze. A simple feed and reversing device causes the polishing wheels to traverse back and forth over the entire working surface of the work rolls at a predetermined speed, thus automatically keeping the rolls polished.



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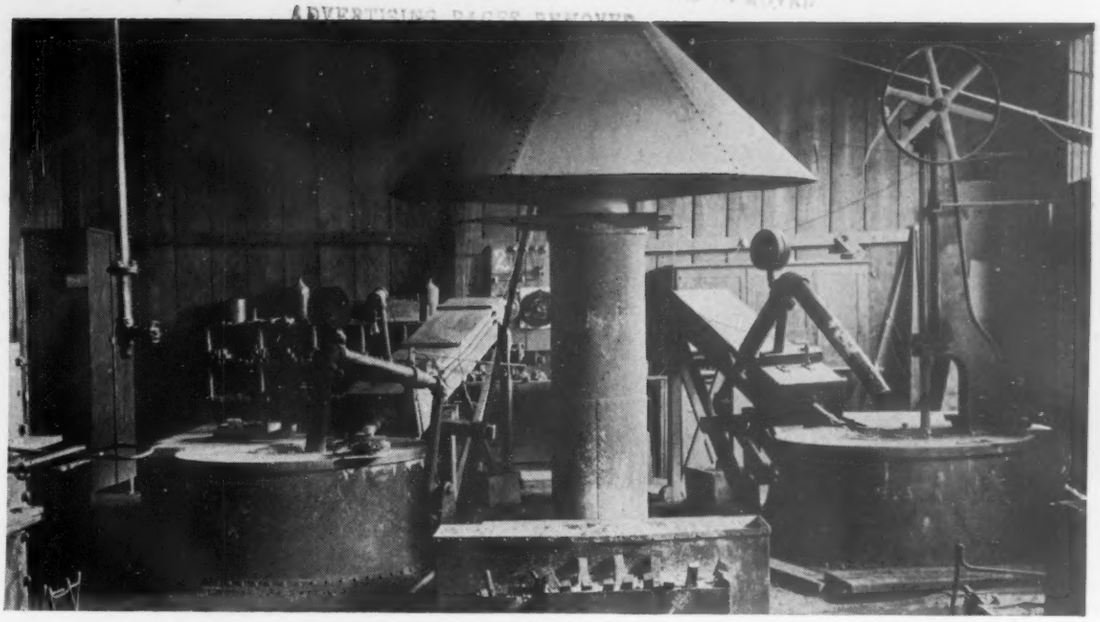

*Fig. 1—The Taylor-White experimental equipment, used in 1898, to develop high-speed steels*

# Making Tool Steel Where Taylor, White Experimented

BY EDWIN F. CONE

CERTAINLY one of the oldest activities of the steel industry is the manufacture of tool steel. In the earliest years, crude tools were made in the open fire; then came the crucible, followed in modern times by the electric melting process in which there have been epoch-making advances. Also in grades of tool steel, the changes have been rapid—from the plain carbon to the high-speed and the special low-alloy brands for almost every purpose.

An epoch in tool steel progress was the development of high-speed steel through the experimentation and research of Taylor and White about 1898. The history of this is familiar. It was at the plant of the Bethlehem Steel Co., Bethlehem, Pa., that the important experiments were conducted. The achievements of Taylor and White were recognized and rewarded at the World's Exposition in Paris in 1900. At the Sesqui-Centennial exposition in Philadelphia, a gold medal was awarded the Bethlehem Steel Co. for its tool steels. Thus closely associated with the gradual evolution of the manufacture of tool steels and in an atmosphere peculiarly favorable to success because of the Taylor-White and other historical associations the present tool steel department of the Bethlehem company is unique. It is the object of this article to sketch the development and some of the features of this plant.

A few years ago the old department at the Bethlehem plant, devoted to tool steel manufacture, was abandoned and a new separate unit established—a plant within a plant. It has its own group of engineers

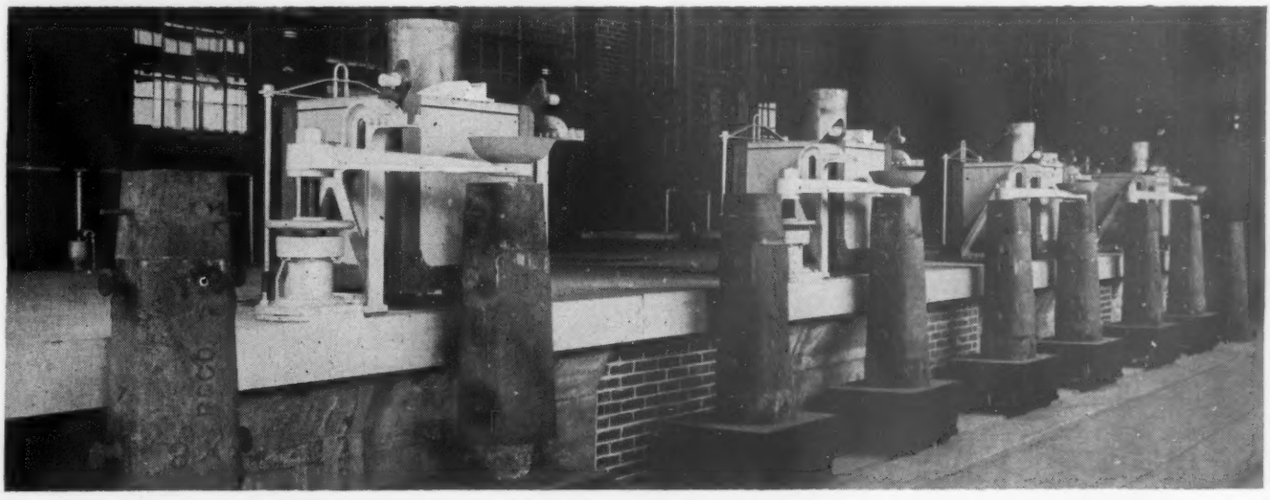

*Fig. 2—Battery of high-frequency electric induction furnaces for producing tool steels*

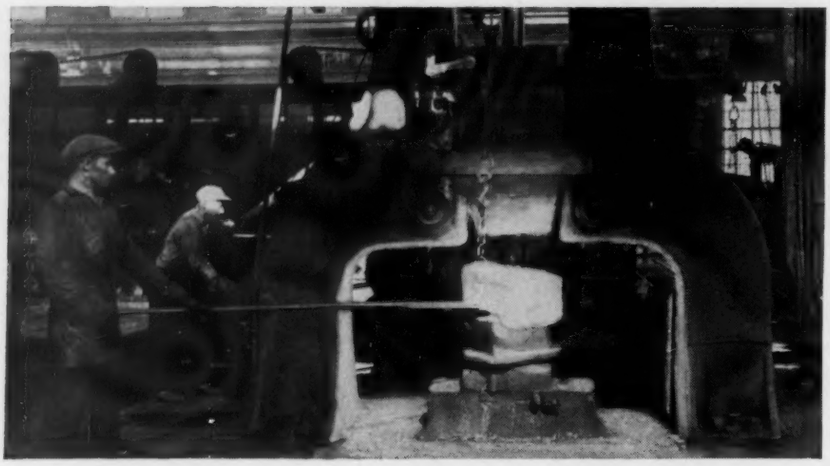

*Fig. 3—Hammer cogging a tool steel ingot on the 14,000-pound hammer*

and salesmen; its own special equipment for melting, rolling and heat treatment; its own cost, shipping and accounting departments; its own metallurgical and inspection service—in fact every step in the manufacture is modern in all details.

It is recognized that electric melting is the most modern and efficient method of producing high-grade tool and other special steels. A few years ago the introduction of the high-frequency induction furnace, in a measure, revolutionized the electric melting process—at least for certain types of steels. The equipment of the company's tool and special steel department consists of five high-frequency furnaces—a 14-pound, two 600-pound and two 1200-pound units—and three arc furnaces—a 500-pound, a 3-ton and a 6-ton unit. Thus every type, quantity and quality of steel can be produced. The 14-pound high-frequency furnace is for special small heats for experimental melts. In the arc furnaces, the lower priced steels are made. In the induction, the denser and more expensive steels are produced. In a measure, the induction furnaces are regarded by some as a reversion to the old crucible method of melting with decided added advantages.

All ingots are poured in large end-up molds with a hot top. Ingots from the induction furnaces average from 4½ inches square and 85 pounds each to 13 inches square at 2300 pounds each. The largest ingot from the arc furnaces weighs 14,000 pounds. The ingots from the 14-pound furnace are about 2¼ inches square and 9 to 10 inches long. A feature of the working down of the ingots, emphasized by the company, is that great care is exercised in their initial reduction. This is accomplished by hammer cogging under a 14,000-pound hammer into blooms, as shown in Fig. 3.

From each end of a bloom are then cut disks which are acid etched for careful examination. Hardenability and other tests are also made. Following these tests, if satisfactory, the blooms are ground all over on four sides, not chipped, to remove usual possible defects. The next step is the rolling of the bloom into billet sizes. Each one of these is also again ground on all sides. The billets are then finish rolled to shipping sizes.

Besides the melting equipment already mentioned, the plant has five hammers, ranging from 500 to 4500-pound, besides the 14,000-pound unit referred to above. For rolling there are two rolling units. The heat treating section includes seven fur-

*Fig. 4—The 6-ton electric arc furnace for making certain tool and special alloy steels*

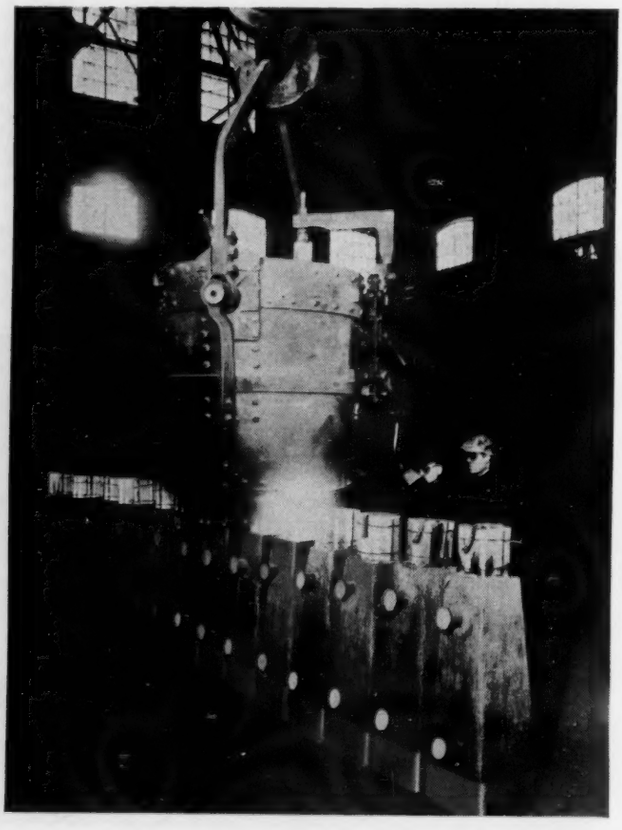

*Fig. 5—Pouring ingots of tool steel from one of the arc furnaces*

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*Fig. 6—Apparatus for grinding, on all sides, the billets of tool steel*

naces, two gas furnaces, and five electric furnaces. For finishing, the equipment consists of one heavy duty draw bench, three grinders and eight straighteners. There is also pickling equipment involving sulphuric, nitric, water and lime tanks.

In this special steel plant many varieties of tool steels are made, including three high-speed types; five carbon tool steels: eleven special alloy tool steels (other than tungsten base); two shearing steels; two grades of mining, quarrying and stone-working steels; and three hot work steels. In this department also are made the nine brands of corrosion-resisting steels and the free-cutting corrosion-resisting steels as well as several magnet steels.

A feature of the annealing of the bar size tool steels is the special apparatus for controlling automatically the heating, holding and cooling cycles for each brand. As developed by the engineers of the tool steel plant, special pyrometric control is secured by originally devised cylinders so constructed that the needle regulating the power input travels on a predetermined platen, 24-hour, cylinder so that the time for heating up, for holding, and for cooling is not subject to any possible human error. Many grades of material are specially protected by packing in sealed containers to prevent surface oxidation.

Thus the control of operations follows a special program—a "program control." Every step, where the application of heat is a factor, is under careful pyrometric regulation. Machinability, the removal of strains, the proper response to hardening are insured. Some of the safeguards of this program of metallurgical control include microscopical examination, hardenability tests, acid etch, examination of normality and grain size and bench inspection—most of this carried out in the metallurgical section of the plant. Further inspection includes testing of the steels by special spark testing equipment and fracture tests.

The foregoing outline points to the fact that this latter-day successor of the old crucible tool steel plant of the Bethlehem company—a plant within a plant—is the embodiment of the latest equipment and practice, traditionally associated with the methods of the small manufacturer. Besides this there is also the consideration that the various products find a ready market and trial for efficiency in the many departments of the company as a whole.

The latter point cannot be too strongly emphasized and visualized. All kinds of tool steels are in constant use in the various machine shops, large and small, of the company, at the Bethlehem plant alone. There they are subjected to the severest tests of efficiency in all kinds of applications on forgings and castings (both plain carbon and alloy) and on many other products including nonferrous. At the company's several other plants, including the affiliated shipbuilding operations, there are constant demands made for tool steels. These activities furnish a "testing laboratory," so to speak, for Bethlehem tool steel products and afford first-hand information as to their quality and efficiency.

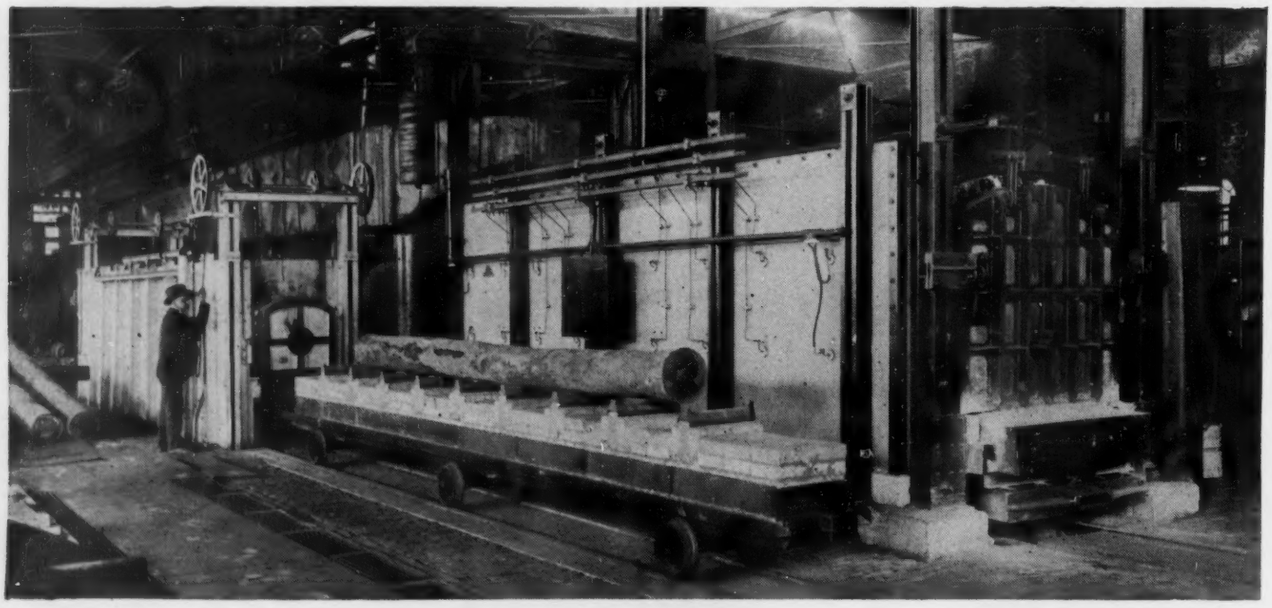

*Fig. 7—One of the electric furnaces for annealing bars of tool steel. The bars are enclosed in a large pipe, packed with carbonaceous material*

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# Alloy Steel Skids Afford Uniform Heating of Billets and Slabs

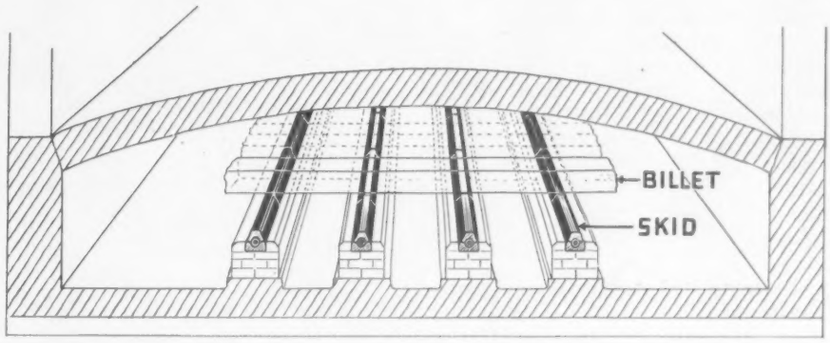
METALLURGICAL research has extended the use of alloy steel castings so rapidly in 14 years that they now constitute approximately 20 per cent of steel casting sales. One of the most difficult and complex problems has been to find suitable material for skids on which billets, slabs and bars slide through continuous type heating furnaces.

Some of the qualifications required in such skids, according to the National Alloy Steel Co., subsidiary of Blaw-Knox Co., Pittsburgh, are long commercial life, resistance to abrasion and corrosion at temperatures up to 2000 degrees Fahr., ability to withstand acids or a high percentage of sulphur and other destructive gases, and both hardness and toughness so they will not be sloughed off by the friction of moving stock.

**Cut Fuel Consumption**

By promoting even and fast heating of the steel of a fairly uniform temperature throughout its section, skids of alloy quality permit the use of a short hot hearth and reduce the fuel consumption. All skids contain high amounts of nickel and chromium; individual specifications varying according to requirements of service.

Many successful installations are operating at temperatures up to 2000 degrees Fahr. and in the presence of high-sulphur gases, Semi-cooled, they have been operated at a maximum temperature of 2400 degrees Fahr. Wear-resisting qualities eliminate shutdowns and prevent the pickup of foreign materials from the bottoms of billets passing through the furnace. When replacements are necessary, the ease of removing the skids reduces the expensive idleness of repair time to a minimum.




*Sketch of rail mill heating furnace showing location of alloy skids on refractory piers*

*Various shapes of nickel-chrome steel skids designed for a rail mill heating furnace*

## Shattered Rails May Be Prevented by New Process

Preliminary results of a study now in progress at the national bureau of standards, Washington, indicate that a recently developed industrial process for slowly cooling steel rails through the blue heat temperature range is effective in preventing "shatter" cracks.

If these findings are borne out in service, a real contribution to safety will have been made because every shattered rail which finds its way into service is a potential source of accidents, according to H. S. Rawdon, chief of the bureau's metallurgical division.

In this study, residual stress measurements were made on 8-inch lengths from each of two rails from the same ingot, one cooled normally after rolling and the other cooled slowly in accordance with the new process. Six longitudinal specimens, ½-inch square in cross section, were cut from the head, web and base of each of the 8-inch pieces. The bars from the center of the head of the normally cooled rail increased in length when isolated from the head, whereas similar bars from the slowly cooled rail decreased in length. The head of the normally cooled rail contained numerous shatter cracks, but the slowly cooled rail was free from shatter.

The results, it is pointed out, are interpreted as indicating that tensile stresses are normally produced in the central part of the head of a rail as it cools, and that in the shattered rail the tensile stresses were relieved when the shatter cracks formed.

## Photocell Aids Automatic Descaling of Steel

In descaling steel in a strip mill, water is sprayed upon the moving white-hot material at various points in its travel through the production department. The water is instantaneously turned to steam upon striking the steel, exploding the scale, which is then washed off by water under high pressure. Formerly it was necessary to manipulate water valves by hand, but by utilizing photoelectric cells, relays and contactor switches the process has been made completely automatic at the mill of the American Tube & Stamping Co., Bridgeport, Conn. The installation is described by H. H. Raymond, consulting engineer for the Stanley Works, New Britain, Conn., in the May 26 issue of *Electrical World*.

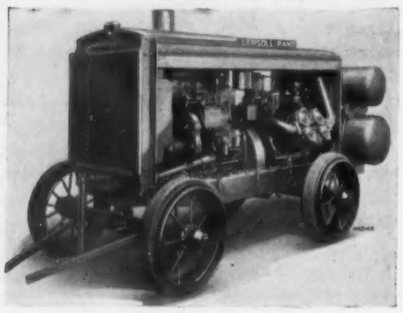
# NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

**Filter for Oxygen Regulators**—Linde Air Products Co., 30 East Forty-second street, New York, recently announced that an improved screen filter is now being incorporated in its oxygen regulators. This improvement gives greater protection against foreign matter entering the regulator. Instead of using a flat screen across the inlet, a double, cone-shaped bronze screen has been developed. A cone of coarse metal screen fits inside one of finer mesh, and both are held in the inlet nipple by a newly developed locking screw.

♦ ♦ ♦

**Portable Air Compressors**—Ingersoll-Rand Co., 11 Broadway, New York, recently doubled its line of two-stage, air-cooled portable air compressors. All six sizes now are available with oil engine drive as shown herewith, as well as with gasoline engine drive. The oil engine, known as type H, is a 4-cycle solid fuel injection, spark ignition unit. It starts easily with a hand crank and operates smoothly, with invisible exhaust, the manufacturer claims. It has high torque at reduced speeds, giving it the "lugging" ability of a steam engine.

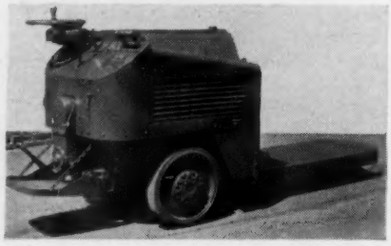


*Ingersoll-Rand two-stage air-cooled portable compressor, oil engine driven*

♦ ♦ ♦

**Industrial Lift Truck** — Elwell-Parker Electric Co., Cleveland, is placing on the market a 3-ton gasoline-operated industrial lift truck, shown herewith. The controls are grouped within easy reach of the operator's right hand: Choke, electric starting button, throttle and shift lever (two speeds forward and two reverse). Dials and indicators are immediately before him on the instrument board. The horn button is on the end of the operator's hand grip. This arrangement permits the keeping of his hand continually on the steering wheel at his left.

The throttle control is located beneath the "balancing grip" by which the operator steadies himself when traveling at high speed. A single pedal controls both the brake and the clutch. The upper half of its motion controls the brake; the lower half controls the clutch, and tends to provide for easy and positive clutching.



*Elwell-Parker 3-ton gasoline-operated industrial lift truck*

Pressing down the pedal releases the brake and engages the clutch. Releasing the pedal, automatically disengages the clutch and then applies the brakes. Brakes are set, the instant the operator steps off the platform or even lifts his foot. Further protection, especially when loaded truck is standing on grades, is afforded by a special transmission gear lock.

Hydraulic type of hoist mechanism, consisting of cylinder and valve, receives fluid under pressure from pump driven directly by motor. The cylinder, through a balanced lift, elevates the platform, mounted on rocking links. Extra clearance beneath the platform has been provided by placing the hoisting cylinder high in the truck. This avoids catching as the truck passes over toeplate to gangplank or into freight car, or rides over the top of a ramp.

♦ ♦ ♦

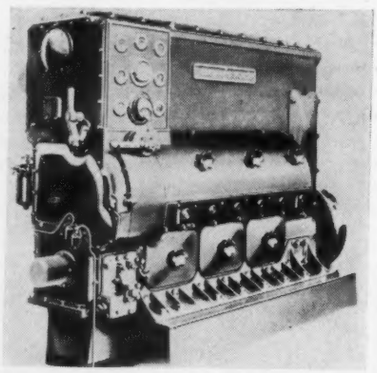
**New Grades of Carboloy**—Carboloy Co. Inc., 2481 East Grand boulevard, Detroit, announces six new grades of Carboloy cemented carbide. These supplement the six existing grades and have been developed primarily to obtain improved performance in special fields of application. Among these applications are the rough and finish boring, finish turning and facing of steel brake drums, single-point finish boring of steel connecting rods, reboring automotive cylinders, and turning-facing-boring piston rings.

Release of these six new grades, designated as 715, 831, 883, 905, 906, 907, is but the initial part of a long-range program which has for its ultimate objective the development of special grades for each field of application in which it is felt that improved results can be obtained. The 12 grades of carboloy cemented carbide now available will be found adequate, the company states, to give the user a high order of results on all present machining applications within the existing range of cemented carbide use. The manufacturer will, however, continue to develop special grades for fields of application where it may be indicated that improved results can be obtained.

♦ ♦ ♦

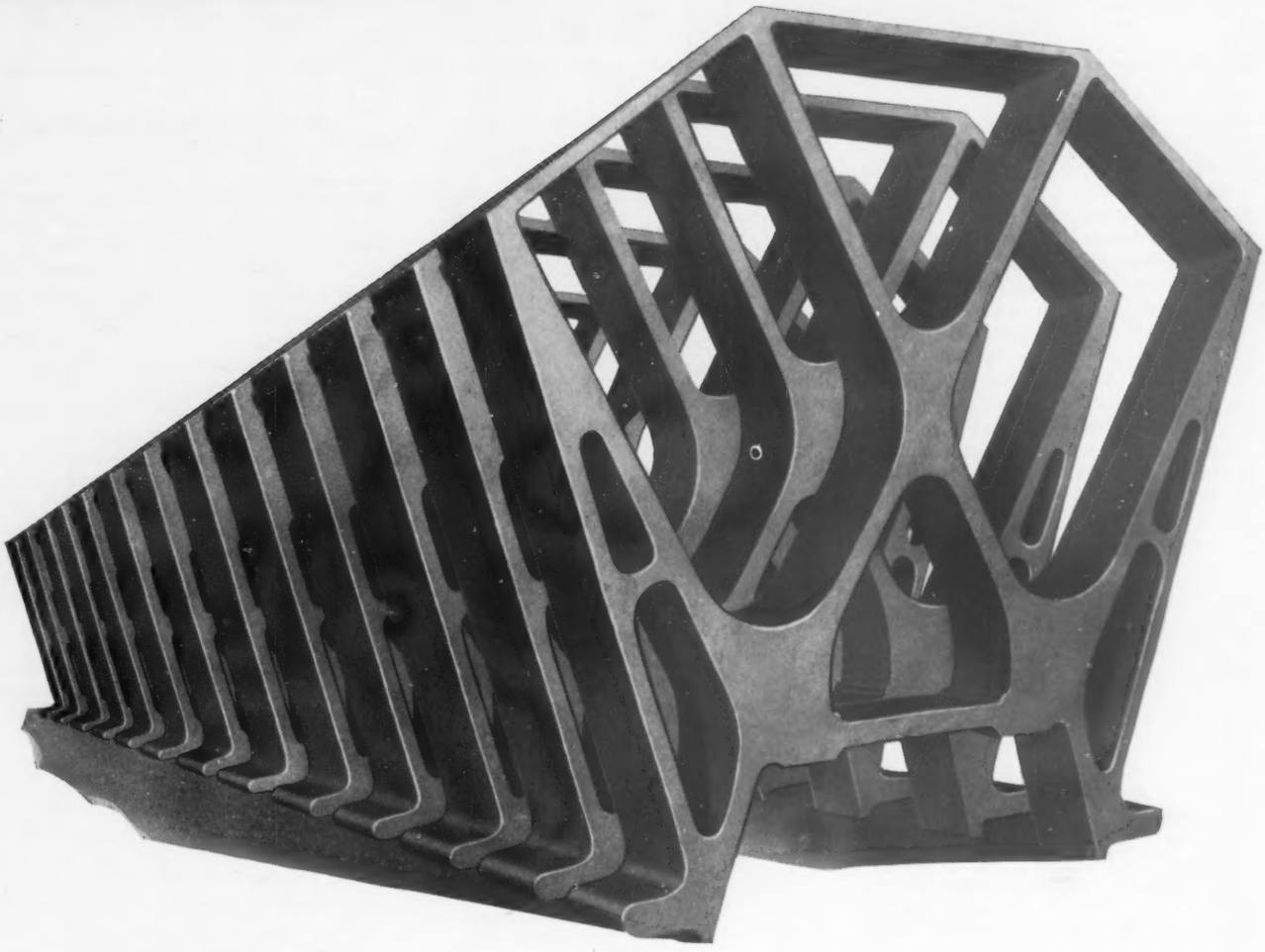
**Diesel Engine**—Fairbanks-Morse & Co., 900 South Wabash avenue, Chicago, is introducing a light-weight opposed piston diesel engine, shown herewith. It is particularly adaptable for railway service, for mobile industrial equipment and marine work as well as for stationary installations.

Design features include two short, large diameter crankshafts with a synchronizing connection which makes for extreme compactness. Control features are unusual as for the first time the three functions of regulating injection timing, pressure and quantity are centered in a single lever, it is said.



*Opposed piston diesel engine developed by Fairbanks-Morse & Co.*

Elimination of cylinder heads by confining the combustion space between the two pistons not only improves combustion but also allows better cooling facilities at this point as well as eliminating the necessity for gaskets. The frame is of rigid light-weight construction which together with the use of aluminum for parts not subjected to stress, such as cover plates, etc., makes for extreme light weight with no reduction in strength. All water and oil piping is



# HORSES... *by Flame... out of Mill*

They really are called horses . . . these V-type Diesel engine main frame members, produced here at Lukens by flame-cutting from plates of Lukens Cromansil Steel, rolled on the Lukens 206″ mill, the world's largest plate mill.

These horses transmit the gas loads from cylinder heads to main bearings. Since the gas load is about 38,000 pounds, of the nature of pure impact and occurring twelve times a second, it's a tough job for any horse, even if it's skilfully cut from high tensile steel, as these horses are.

Can we flame-cut you some horses . . . sawbucks . . . or what have you . . . and give you a product improvement along with a probable money-saving? Lukens Steel Company, Coatesville, Pennsylvania.

*Lukens* **CROMANSIL** *Steel*

permanently tight as are also the intake and exhaust manifolds. Built-in duplex rotary scavenger blowers are provided and the uniflow principle of scavenging is employed. Other built-in auxiliaries include lubricating oil pumps—fuel oil service and transfer pumps and circulating water pumps.

These engines are available in five cylinder sizes, 5 by 6 inches, 6½ by 8, 8 by 10, 10 by 12 and 12 by 15 inches, and in 6, 7 and 8-cylinder combinations with a 5-cylinder size in the smallest bore. Power capacities range from 50 to 300 horespower per cylinder or for the engine, from 250 to 2400 horsepower.

• • •

**Metallic Wound Furnaces**—Harold E. Trent Co., 618-640 North Fifty-fourth street, Philadelphia, is producing furnaces with metallic ribbon for temperatures up to 2450 degrees Fahr. The furnace, illustrated below, has been designed for checking thermocouples, and has a long area for even heat. The standard laboratory and box-type furnaces for temperatures up to 1850 degrees Fahr. have been modified and can now be obtained for temperatures up to 2400 degrees Fahr. They can also be provided with piping for hydrogen atmosphere. Furnaces of special design with high, even temperatures are, therefore, now available for metallurgical laboratory research.

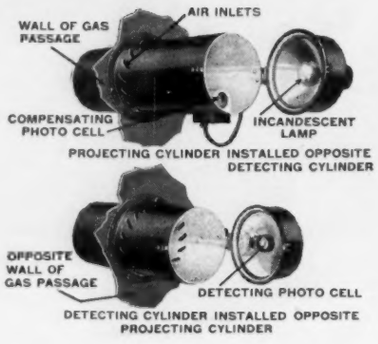
• • •

**Smoke Recorder** — Bailey Meter Co,. 1050 Ivanhoe road, Cleveland, has brought out a new photo cell smoke density recorder compensated for variations in light source intensity and operated by the galvatron electronic relay circuit. This equipment, shown herewith, consists of a receiving element in the form of an attractive recorder and a transmitting element consisting of a projecting cylinder and a detecting cylinder which are mounted on opposite sides of the breeching or flue gas passage.

A continuous record of relative smoke density is made by the recorder on a 12-inch uniformly graduated recording chart. This record clearly indicates stack conditions at all times, night and day, showing definitely each period of tube blowing.

It will be noted from the accompanying illustration that two photo cells are employed in the transmitting element, one in the projecting cylinder and the other in the detecting cylinder. Full luminous flux from the incandescent lamp light source is received by the compensating cell at all times regardless of the smoke density condition within the gas passage. However, the photo cell located in the detecting cylinder on the opposit side of the gas passage receives light of varying intensities, depending upon the density of the smoke in the passage. Both cells consist of a thin metallic disk covered with light sensitive material which develops a current proportional to the intensity of illumination.

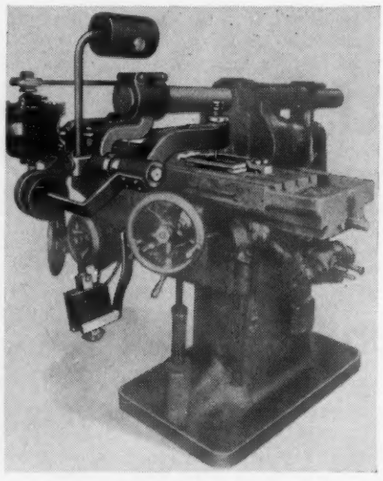
*LEFT — Bailey recording galvatron for obtaining a continuous record of relative smoke density. Below — Transmitting element of the smoke density recording unit*



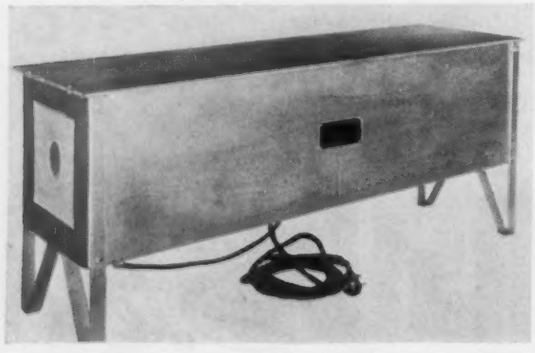

**Profiler, Die Sinking Attachment**—Cleveland Profiling Machine Co., 6011 Lexington avenue, Cleveland, has announced development of a profiler and die sinking attachment designed to be attached to the overarm of standard milling machines in the same manner as applying an arbor support. The illustration herewith shows a general view of the profiler in operating position. Two arms extend from a hinged shaft supported on taper roller bearings. These arms are connected rigidly at their extremities directly between a follower and cutting tool so that there can be no movement of one not accurately reproduced by the other.

Table of the milling machine is elevated to a point where the follower and cutting tool are in a vertical position. The arms will then be in horizontal position and the point at which work is being done will be in horizontal line with the center of hingshaft. As the table moves back and forth the follower, being sensatively mounted on the taper rolls, rides the pattern and the cutter accurately reproduces that pattern.

A motor is employed having a double-grooved pulley which is transversely interchangeable with that of the cutter spindle so that eight speeds



*Cleveland profiler and die sinking attachment for milling machines*



*TRENT furnace, metallic wound, for temperatures up to 2450 degrees. This unit was designed for checking thermocouples and has a long area for even heat*

are available ranging from 800 to 5000 revolutions per minute. Automatic stops are adjusted to accommodate the range of work to be done. When these stops are contacted an electric magnet is energized which feeds the work laterally and simultaneously with reverse movement of the table. The entire structure is operated by positive mechanical movements so that no failure may occur to destroy the work; should the mag-

ADVERTISING PAGES REMOVED

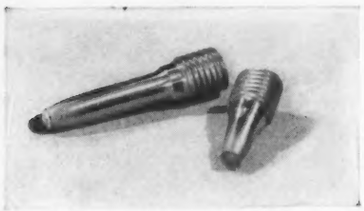


netic cross feed fail to function no damage will be done.

♦ ♦ ♦

**Welding Electrodes** — Metal & Thermit Corp., 120 Broadway, New York, has developed a new heavy coated electrode to overcome difficulty in arc welding steels containing more than 0.20 per cent carbon. Known as the Murex special A, the electrode is claimed to hinder the migration of carbon from the parent metal to the deposited metal when welding and assures a more ductile deposit.

The deposit, containing a small quantity of nickel, has unusually good physical properties, it is said. Tensile strength of these deposits is 73,000 pounds per square inch; yield point 59,000 pounds per square inch; elongation in 2 inches is 31 per cent; and



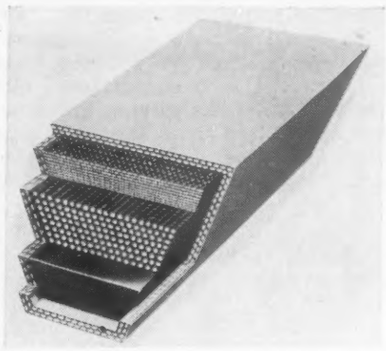
*Full-cupped fracture in specimen of Murex welding electrode*

reduction in area is 63.5 per cent. The illustration herewith shows a perfect full-cupped fracture obtained on 73,000 pounds per square inch in a weld metal specimen made with the new electrode.

Other electrodes developed by the company and designed for use with the high strength steels, now make it possible to obtain welds with tensile strengths of 85,000 to 100,000 pounds per square inch, it is declared. Such high strengths are obtained by including nickel or molybdenum, or a combination of these elements in the deposited metal. For example, one of the new electrodes, depositing 2½ per cent nickel, is being used extensively in the welding of steels of this same analysis for low temperature work where welds must show Charpy impact resistance of 10 to 24 foot pounds at the low temperature of -75 degrees Fahr. Tensile strengths average 86,000 and yield points 72,000 pounds per square inch; elongation in 2 inches is 25.5 per cent; reduction in area is 64 per cent.

♦ ♦ ♦

**Multi-V-Belts** — B. F. Goodrich Rubber Co., Akron, O., has announced improved construction in multi-V-belts. In the new design preservation of balance is paramount in importance, the manufacturer declares.



*Goodrich multi-V-belt compounded to reduce internal heat to minimum*

The three layers are balanced to resist stretch and cover wear. Belts are compounded to reduce internal heat to a minimum. Arrangement and construction of the layers of the belt are shown in the accompanying illustration.

♦ ♦ ♦

**Polishing, Buffing Unit**—Acme Mfg. Co., Detroit, recently developed a type L-8 two-wheel unit, shown herewith, for polishing and buffing small stampings, die castings etc., such as escutcheons, knobs, caps, bezel rings and many other small parts. Brass stampings are being finished completely at the rate of 1000 per hour, cutting down and coloring.

It is a complete automatic machine with indexing work holder head and lathes combined. The object being to finish two operations in a single loading; either a double wheel contact on the same work surface such as cutting down and coloring, or having a side and face contact, completing two single wheel operations.

The indexing head has eight spindles which hold the chucks for gripping the particular work to be finished. The two opposite spindles, contacting the buffing wheels revolve while the three lower spindles are the loading spindles and do not revolve. The head indexes automatically at various speeds up to 1200 indexing per hour, depending upon the contact time required to obtain the required finish.

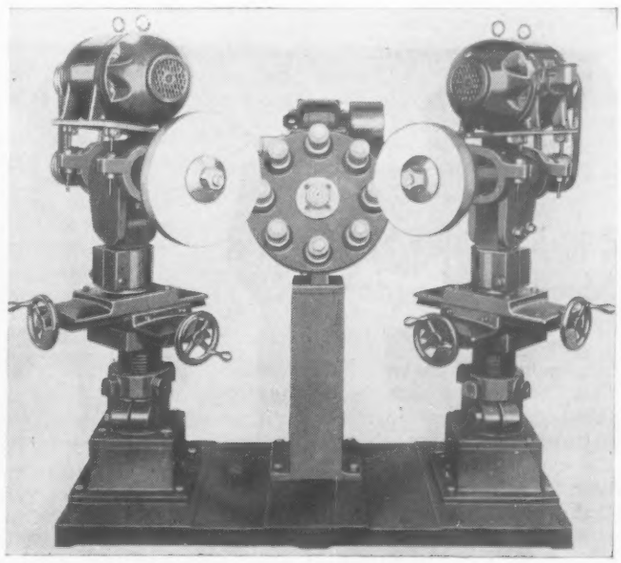
The lathes are built adjustable so that contact to the work can be made at any desired angle to the work on the revolving spindles, as well as having adjustments for wheel wear.

Chucking arrangements on this machine have been designed for holding work being polished or buffed, in a manner that will automatically eject the work at the point half way between the right-hand revolving spindle and the next lower spindle during the indexing. The work is gripped automatically just before it contacts the left-hand buffing wheel. Three spindles are left open for the operator to load. Work up to 4½ inches in diameter can be handled on the machine.

♦ ♦ ♦

**Converters**—Pioneer Gen-E-Motor Corp., 464 West Superior street, Chicago, recently developed converters for operating any small alternating current appliance from direct current sockets. The unit measures only 4⅛-inches high by 2⅞-inches deep and is furnished complete with cord and plug for connecting to any 110 volt direct current socket and will then provide a 110 volt, 60 cycle alternating current output. Models also are available for operation from 6 and 32 volt direct current sources.

*INDEXING head of Acme polishing and buffing unit has eight spindles which operate automatically at various speeds. The two opposite spindles contacting the buffing wheels revolve while the three lower spindles are the loading members and do not revolve. This two-wheel unit is designated type L-8*



## Purchasing Agents Will Air Code Problems

(*Concluded from Page* 26)

were in the hands of the association staff and a Cleveland convention committee of which Ralph Sweeney, Allyne-Ryan Foundry Co., is general chairman. Vice-chairmen are W. W. MacMillen, National Malleable & Steel Castings Co., and Frank L. Kulow, Willard Storage Battery Co. Harry Bechold, Cleveland Frog & Crossing Co., is treasurer of the committee.

The chairman of the convention committees are: Inform-a-Show, H. N. Williams, Scott & Fetzer Co.; registration, W. G. Winship, Foote-Burt Co.; hotels, G. A. Collier, Cleveland Automatic Machine Co.; publicity, Walter S. Doxsey, *Daily Metal Trade;* program, Donald G. Clark Brown & Sharpe Mfg. Co., Providence, R. I. and George Kohlmetz, Cleveland Twist Drill Co.; entertainment, W. E. Rice, Graybar Electric Co.; reception, Ralph Willson, C. O. Bartlett & Snow Co.; transportation, E. C. Manning, Fisher Body of Cleveland division of General Motors Corp.; purchasing agent, G. M. Evans, Leece-Neville Co.; plant visitation, J. M. McKenzie, West Steel Castings Co.; golf, H. A. Krause, National Screw & Mfg. Co.; service, George Stolpman, Cleveland Welding Co.

The president of the National Association of Purchasing Agents is Walter N. Kirkman, Maryland State purchasing agent, Baltimore. Its executive secretary-treasurer is G. A. Renard, 11 Park Place, New York.

Vice presidents are C. G. Bunnell, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; Donald G. Clark, Brown & Sharpe Mfg. Co., Providence, R. I.; R. H. Garrot, United Fruit Co., New Orleans, La.; J. Paul Nolan, Pratt & Lambert Inc., Buffalo; Warren J. Ulrich, Pacific Machinery & Tool Steel Co., Portland, Oreg.; Lee J. Bussman, Bussman Mfg. Co., St. Louis; Raymond E. Flynn, Union Guardian Trust Co., Detroit; C. F. McAuliff, Texas Electric Railway, Dallas, Texas; Wm. T. Roach, Eastman Kodak Co., Rochester, N. Y. and Frank C. Woodroffe, Henry Morgan & Co. Ltd., Montreal.

## British Institute Holds Meeting in London

(*Concluded from Page* 45)

to a surprising degree; he suggested that those sheets had been manufactured from charcoal iron containing neither sulphur nor phosphorus, that the manufacture of the sheets had been particularly well effected, and that the inspection of such sheets must have been very rigorous. W. R. Lysaght mentioned that this Russian sheet iron usually was covered with very heavy scale, which constitutes an effective protection.

Dr. McCance again emphasized the fundamental necessity for using good protective paint. He stated that two ships were built with pickled and descaled sheets; one was painted with ordinary red lead and linseed oil, while the other was covered with non-settling red lead paint. The first ship stood service wonderfully well, whereas the second showed a certain amount of corrosion after having been in service for a few months.

Manufacture of full-finished steel sheets was discussed by E. R. Mort, Swansea. He described the latest practice in the manufacture of full-finished sheets used in the automobile industry and referred to American practice. In discussion, it was pointed out that full-finished sheets probably will be adopted more widely as time passes, their use in Great Britain at present being limited largely to automobile sheets and steel furniture.

# New Trade Publications

HELMETS—W. W. Sly Mfg. Co., 4704 Train avenue, Cleveland, has published a folder on its helmet designed to safeguard against inhalation of injurious dust, regardless of fineness or concentration.

BEARINGS—Bantam Ball Bearing Co., South Bend, Ind., has issued a catalog devoted exclusively to printing press roller bearings, illustrated with photographs and line drawings of various types of bearings.

PUMPS—Pennsylvania Pump & Compressor Co., Easton, Pa., has published bulletin No. 223 on its combination pump and blower unit. A description of the various parts of the unit and head capacity tables are featured.

PUMPS—Ingersoll-Rand Co., Phillipsburg, N. J., has published a 16-page folder describing and illustrating its motor pumps in 26 sizes, from ¼ to 30-horsepower. Tables of capacities and performance data are given.

STAINLESS STEELS—A number of publications have been issued by Edgar Allen & Co. Ltd., Sheffield, Eng., covering its stainless steel castings, pins and bushings and presenting a series of steel selection and heat treatment tables conveniently aranged for reference.

AIR CONDITIONING — The importance of air conditioning in modern business is discussed in a recent booklet published by the General Electric Co., Schenectady, N. Y. Several types of air conditioning equipment are illustrated.

CONTROLLED ATMOSPHERE FURNACES—A bulletin on its special controlled atmosphere furnaces has been issued by the Surface Combustion Corp., Toledo, O. Illustrations show several types of such furnaces for special uses, with description of their performance.

AUTOMATIC WEIGHT RECORDERS—Catalog No. 1.32 by the Streeter-Amet Co., 4101 Ravenswood avenue, Chicago, covers its automatic weight recorder, a device to be attached to present scale equipment to give a permanent printed record of weight transactions. Illustrations indicate many of its applications.

COMPRESSORS—Worthington Pump & Machinery Corp., Harrison, N. J., has published several bulletins dealing with its line of compressors and pumps. Specifically, the bulletins describe small air compressor units, refrigeration compressors, rotary pumps, and vertical triplex single acting power pumps.

THERMOMETERS — A resistance thermometer for measuring temperatures from —300 to +1000 degrees Fahr. is described in a catalog of the Brown Instrument Co., Philadelphia. The thermometers are available in indicating, recording and controlling types.

COMPRESSORS — Gardner-Denver Co., Quincy, Ill., has published a bulletin on its duplex-horizontal compressors for compressing air or gas. Information is presented on the design and construction of various parts and data are presented on sizes and capacities of direct connected and belt driven units.

STEEL CASTINGS—A recent publication of Sivyer Steel Casting Co., Milwaukee, commemorates the twenty-fifth anniversary of the foundry and illustrates methods and equipment employed when the foundry was organized in 1919, compared with present methods of manufacturing plain and alloy steel castings.

MAGNESIUM—Information of interest to engineers and designers on the use of magnesium is contained in a data book recently published by the Dow Chemical Co., Midland, Mich. Information includes uses, forms in which the material is available, design, shop practice, color finishes, property tables, structural shapes, etc.

FURNACE INSULATION—Johns-Manville, 22 East Fortieth street, New York, has published a booklet devoted to insulation of industrial furnaces and ovens. A wide variety of applications are pictured and discussed, and numerous products for insulating purposes are described and illustrated.

TESTING MACHINES—A bulletin of the Tinius Olsen Testing Machine Co., Philadelphia, describes and illustrates four machines, one with 50,000 pounds capacity, for testing long tension or compression members, a second with capacity from 30,000 to 40,000 pounds, of a three-screw rotating gear nut type equipped with eight-speed gear box drive, the third having 30,000 to 40,000 pounds capacity with four-screw rotating gear nut type and the fourth having a capacity from 10,000 to 20,000 pounds, designed for testing bulky material in compression.

# Steel Shipments at Peak; New Buying Scarce

## Operations Hold at 62 Per Cent—Production Is Main Problem for Remainder of Quarter—Automobile Manufacturers Begin Drive for Lower Prices

WITH a rush in shipments to complete second quarter contracts by the close of June in accordance with code requirements, steelworks operations last week held at a strong 62 per cent.

Steelmakers are rapidly draining their backlogs of unfilled orders, while consumers' inventories, uncertainties regarding the trend of prices in the third quarter, and labor unrest in some industries are militating against commitments for that period.

In the meantime, producers have practically reached the point where they cannot accept further orders for delivery this month. The situation in the market, therefore, has resolved itself entirely into a production problem for the remainder of June.

If steelworkers finally strike it is possible mills will be shut down, and any serious impediment to completing second quarter contracts due to labor disturbance might be adjusted by an extension of the time limit for making deliveries. If a strike fails to develop, producers are in good position to maintain operations at a comparatively high level at least until July 1.

A considerable volume of new buying must be done for next month; in many instances during the week sellers were compelled to refuse spot orders at the higher level of prices from consumers who had underestimated requirements. This was in deference to contract obligations.

### Third Quarter Prices Still To Be Tested; 50,000 Tons of Sheet Piling Up for Figures

Automobile production again last week made a moderate gain, recent price reductions apparently tending to revive sales. Pressure for lower steel prices for third quarter is expected to be especially insistent from automobile manufacturers, who are already driving for a 10 per cent cut in their contract prices with partsmakers, these in turn sounding out steelmakers.

As automobile manufacturers themselves are heavily stocked with bars, sheets and strip, it is on construction work and railroad requirements that the steel industry relies principally for support in July. Large structural steel tonnages still are pending for government dam construction in western states, 50,000 tons of sheet piling being required for two projects on which bids are being taken.

Structural awards last week increased slightly to 16,311 tons, including 2500 tons for a strip mill building for the Youngstown Sheet & Tube Co., and 3500 tons for the International Nickel Co. of Canada's mill project at Sudbury, Ont.

### United States Government Sells 8000 Tons of Scrap to Japan; Price Decline Checked

At Pittsburgh, inquiries have developed for 20 barges, requiring 4000 tons of plates and shapes. Plate production in the East is at the highest point of the year, the Pennsylvania railroad releasing 4000 tons of plates. Rail mill operations at Chicago have tapered off from 40 per cent, but are expected to continue above 30 per cent to the close of August. Orders for accessories and repair material still are fairly heavy. The Seaboard Air Line has awarded 1000 double-sheathed box cars. Illinois Central is to build a streamlined train and buy 11 diesel locomotives, the PWA having authorized a loan. Boston & Maine has placed a 3-car streamlined stainless steel train.

Although there is comparatively little trading in iron and steel scrap, prices after ten consecutive weeks decline are firmer, and STEEL's scrap composite has advanced 4 cents to $10.29. A Japanese freighter has loaded 8000 tons of scrap at Balbao, C. Z., purchased from the United States government through the Panama Canal commission for shipment to Japan. Lake furnace interests are shipping nearly twice as much pig iron this month as in May. Steel foundries on railroad parts are operating at their highest rate of the year.

Steelworks operations in the Pittsburgh district last week rose 2 points to 56 per cent, this increase being attributed mainly to the desire of companies to have full forces on hand for employe representation elections. The Wheeling district operating rate also advanced 2 points to 81 per cent; Detroit was off 18 points to 82; and Cleveland, one to 77. Chicago held at 70; Youngstown 66; eastern Pennsylvania 46½; New England 70; Buffalo 58; Birmingham 55.

STEEL's iron and steel price composite is unchanged at $34.77, and the finished steel composite remains $54.80.

# COMPOSITE MARKET AVERAGES

| | June 16 | June 9 | One Month Ago May, 1934 | Three Months Ago March, 1934 | One Year Ago June, 1933 | Ten Years Ago June, 1924 |
|---|---|---|---|---|---|---|
| Iron and Steel Composite | $34.77 | $34.77 | $34.77 | $32.40 | $28.73 | $40.61 |
| Finished Steel Composite | 54.80 | 54.80 | 54.80 | 51.10 | 45.30 | 64.38 |
| Steelworks Scrap Composite | 10.29 | 10.25 | 11.30 | 12.30 | 9.55 | 13.97 |

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

# A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

## Finished Material

| | June 16, 1934 | May 1934 | March 1934 | June 1933 |
|---|---|---|---|---|
| Steel bars, Pittsburgh | 1.90 | 1.90 | 1.75 | 1.60 |
| Steel bars, Chicago | 1.95 | 1.95 | 1.80 | 1.70 |
| Steel bars, Philadelphia | 2.19 | 2.19 | 2.04 | 1.91 |
| Iron bars, Terre Haute, Ind. | 1.85 | 1.75 | 1.60 | 1.65 |
| Shapes, Pittsburgh | 1.85 | 1.85 | 1.70 | 1.60 |
| Shapes, Philadelphia | 2.05½ | 2.05½ | 1.90½ | 1.65 |
| Shapes, Chicago | 1.90 | 1.90 | 1.75 | 1.70 |
| Tank plates, Pittsburgh | 1.85 | 1.85 | 1.70 | 1.55 |
| Tank plates, Philadelphia | 2.03½ | 2.03½ | 1.88½ | 1.49½ |
| Tank plates, Chicago | 1.90 | 1.90 | 1.75 | 1.70 |
| Sheets, No. 10, hot rolled, Pitts. | 2.00 | 2.00 | 1.75 | 1.65 |
| Sheets, No. 24, hot ann., Pitts. | 2.65 | 2.65 | 2.25 | 2.10 |
| Sheets, No. 24, galvan., Pitts. | 3.25 | 3.25 | 2.85 | 2.70 |
| Sheets, No. 10, hot rolled, Gary | 2.10 | 2.10 | 1.85 | 1.80 |
| Sheets, No. 24, hot anneal., Gary | 2.75 | 2.75 | 2.35 | 2.25 |
| Sheets, No. 24, galvan., Gary | 3.35 | 3.35 | 2.95 | 2.85 |
| Plain wire, Pittsburgh | 2.30 | 2.30 | 2.20 | 2.10 |
| Tin plate, per base box, Pitts. | 5.25 | 5.25 | 5.25 | 4.25 |
| Wire nails, Pittsburgh | 2.60 | 2.60 | 2.35 | 1.85 |

## Semifinished Material

| | | | | |
|---|---|---|---|---|
| Sheet bars, open-hearth, Youngs. | 30.00 | 30.00 | 26.00 | 26.00 |
| Sheet bars, open-hearth, Pitts. | 30.00 | 30.00 | 26.00 | 26.00 |
| Billets, open-hearth, Pittsburgh | 29.00 | 29.00 | 26.00 | 26.00 |
| Wire rods, Pittsburgh | 38.00 | 38.00 | 36.00 | 35.00 |

## Pig Iron

| | June 16, 1934 | May 1934 | March 1934 | June 1933 |
|---|---|---|---|---|
| Bessemer, del. Pittsburgh | 19.76 | 19.76 | 19.26 | 17.26 |
| Basic, Valley | 18.00 | 18.00 | 17.00 | 15.00 |
| Basic, eastern, del. eastern Pa. | 19.76 | 19.76 | 18.76 | 16.19 |
| No. 2 foundry, del. Pittsburgh | 19.26 | 19.26 | 18.76 | 16.76 |
| No. 2 foundry, Chicago | 18.50 | 18.50 | 17.50 | 16.00 |
| Southern, No. 2, Birmingham | 14.50 | 14.50 | 13.50 | 12.00 |
| No. 2X, Eastern, del. Philadelphia | 20.63 | 20.63 | 19.63 | 16.76 |
| Malleable, Valley | 18.50 | 18.50 | 17.50 | 15.50 |
| Malleable, Chicago | 18.50 | 18.50 | 17.50 | 16.00 |
| Lake Superior charcoal, del. Chi. | 23.54 | 23.54 | 23.54 | 23.04 |
| Gray forge, del. Pittsburgh | 18.88 | 18.88 | 18.38 | 16.63 |
| Ferromanganese, del. Pittsburgh | 89.79 | 90.24 | 90.24 | 73.24 |

## Scrap

| | | | | |
|---|---|---|---|---|
| Heavy melting steel, Pittsburgh | $11.75 | 12.80 | 14.35 | 11.65 |
| Heavy melting steel, eastern Pa. | 10.50 | 10.90 | 11.70 | 9.50 |
| Heavy melting steel, Chicago | 9.75 | 10.85 | 12.00 | 8.80 |
| No. 1 wrought, eastern Pa. | 11.25 | 11.55 | 12.75 | 10.25 |
| No. 1 wrought, Chicago | 9.50 | 10.25 | 10.80 | 8.10 |
| Rails for rolling, Chicago | 11.25 | 12.15 | 12.75 | 10.25 |

## Coke

| | | | | |
|---|---|---|---|---|
| Connellsville, furnace, ovens | 3.60 | 3.45 | 3.35 | 1.80 |
| Connellsville, foundry, ovens | 4.60 | 4.60 | 4.25 | 2.40 |

# Steel, Iron, Raw Material and Metals Prices

*Prices conform to American Iron and Steel institute schedules. Asterisks denote price changes this week*

## Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

| | |
|---|---|
| Pittsburgh, base | 2.00c |
| Gary, base | 2.10c |
| Chicago, del. | 2.13c |
| New York, del. | 2.33c |
| Philadelphia, del. | 2.29c |
| Birmingham, base | 2.15c |
| St. Louis, del. | 2.32c |
| F.o.b. cars, dock Pacific ports | 2.55c |

HOT ROLLED ANN. No. 24

| | |
|---|---|
| Pittsburgh, base | 2.65c |
| Gary, base | 2.75c |
| Chicago, del. | 2.78c |
| Detroit, del. | 2.85c |
| New York, del. | 2.98c |
| Philadelphia, del. | 2.94c |
| Birmingham, base | 2.80c |
| St. Louis, del. | 2.97c |
| F.o.b. cars, dock, Pacific ports | 3.25c |

GALVANIZED No. 24

| | |
|---|---|
| Pittsburgh, base | 3.25c |
| Gary, base | 3.35c |
| Chicago, del. | 3.38c |
| Philadelphia, del. | 3.54c |
| New York, del. | 3.58c |
| Birmingham, base | 3.40c |
| St. Louis, del. | 3.57c |
| San Francisco, f.o.b. cars, dock | 3.85c |

TIN MILL BLACK No. 28

| | |
|---|---|
| Pittsburgh, base | 2.85c |
| Gary, base | 2.95c |
| St. Louis, del. | 3.17c |

COLD ROLLED No. 10

| | |
|---|---|
| Pittsburgh, base | 2.55c |
| Gary, base | 2.65c |
| Detroit, delivered | 2.75c |
| Philadelphia, del. | 2.84c |
| New York, del. | 2.88c |
| F.o.b. cars, dock, Pacific ports | 3.15c |

COLD ROLLED No. 20

| | |
|---|---|
| Pittsburgh, base | 3.15c |
| Gary, base | 3.25c |
| Detroit, delivered | 3.35c |
| Philadelphia, del. | 3.44c |
| New York, del. | 3.48c |

ENAMELING SHEETS

| | |
|---|---|
| Pittsburgh, No. 10 | 2.60c |
| Pittsburgh, No. 20 | 3.20c |

## Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

| | |
|---|---|
| Tin plate, coke base contract | $5.25 |
| Do., stock | 4.90c |
| Long ternes, No. 24 unassorted | 3.65c |

## Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets, 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 32.00c.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 17c | 18.5c | 21c | 26c |
| Plates | 20c | 21.5c | 24c | 29c |
| Sheets | 25c | 28c | 31c | 35c |
| Hot strip | 17c | 18.5c | 21c | 26c |
| Cold strip | 22.5c | 24c | 27c | 35c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

## Steel Plates

| | |
|---|---|
| Pittsburgh, base | 1.85c |
| New York, del. | 2.13c |
| Philadelphia, del. | 2.03½c |
| Boston, del. | 2.25c |
| Buffalo, del. | 2.08½c |
| Chicago or Gary, base | 1.90c |
| Cleveland, del. | 2.03½c |
| Birmingham, base | 2.00c |
| Coatesville, base | 1.95c |
| Sparrows Pt., base | 1.95c |
| Pacific Coast, f.o.b. cars, dock | 2.40c |
| St. Louis, del. | 2.12c |

## Structural Shapes

| | |
|---|---|
| Pittsburgh, base | 1.85c |
| Philadelphia, del. | 2.05½c |
| New York, del. | 2.10¼c |
| Boston, del. | 2.23½c |
| Bethlehem, base | 1.95c |
| Chicago, base | 1.90c |
| Cleveland, del. | 2.03½c |
| Buffalo, base | 1.90c |
| Gulf ports | 2.25c |
| Birmingham, base | 2.00c |
| Pacific Coast, f.o.b. cars, dock | 2.40c |

## Bars

SOFT STEEL

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Chicago or Gary, base | 1.95c |
| Duluth, base | 2.10c |
| Birmingham, base | 2.05c |
| Buffalo, base | 2.00c |
| Cleveland, base | 1.95c |
| Detroit, del. | 2.05c |
| Pacific Coast ports cars, dock, c.i.f. | 2.45c |
| Philadelphia, del. | 2.19c |
| Boston, del. | 2.30c |
| New York, del. | 2.23c |
| Pitts., forg. qual | 2.05c-2.55c |

RAIL STEEL
To Manufacturing Trade

| | |
|---|---|
| Pittsburgh base | 1.80c |
| Chicago or Gary, base | 1.85c |
| Moline, Ill., base | 1.85c |
| Cleveland, base | 1.85c |
| Buffalo, base | 1.90c |

IRON

| | |
|---|---|
| *Terre Haute, Ind... | 1.85c |
| Chicago ..... | 1.90c |
| Philadelphia, base.. | 1.99c |
| Pittsburgh, refined.. | 2.75c-7.50c |

REINFORCING
New billet, cut lengths, carlots

| | |
|---|---|
| Pittsburgh ..... | 2.05c |
| Chicago, Gary, Buffalo, Cleve., Birm., Young.... | 2.10c |
| Gulf ports ..... | 2.45c |
| *Pacific coast ports ..... | 2.50c |
| Philadelphia, del. ..... | 2.34c |

Rail Steel

| | |
|---|---|
| Pittsburgh, base ..... | 1.90c |
| Chicago, Buffalo, Cleveland, Birm., Young..... | 1.95c |
| Gulf ports ..... | 2.30c |
| Pacific coast ports ..... | 2.45c |

## Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland
(Per 100-lb. keg)

| | |
|---|---|
| Standard wire nails ..... | $2.60 |
| Cement coated nails ..... | 2.60 |
| Galvanized nails, 15 gage and coarser ..... | 4.60c |
| Do., 16 gage and finer.. | 5.10c |

(Per pound)

| | |
|---|---|
| Polished staples ..... | 3.30c |
| Galvanized fence staples | 3.55c |
| Barbed wire, galv. ..... | 3.00c |
| Annealed fence wire..... | 2.45c |
| Galvanized fence wire.... | 2.80c |
| Woven wire fencing (base column, c.l.)..... | $63.00 |
| Plain wire, 6-9 gage to mfg. trade ..... | 2.30c |

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

| | |
|---|---|
| Spring wire ..... | 3.20c |

Chicago and Waukegan $1 higher, Worcester $2 higher.

## Cold-Finished Carbon Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

| | |
|---|---|
| 10,000 to 19,999 lbs..... | 2.10c |
| 20,000 to 59,999 lbs..... | 2.05c |
| 60,000 to 99,999 lbs..... | 2.00c |
| 100,000 lbs. and over..... | 1.97½c |

Chicago, Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

## Shafting □ □ □

| | |
|---|---|
| Turned and ground, Pitts. base | |
| 1⅛-inch ..... | 3.40c |
| 1⅜ to 1½-inch..... | 2.90c |
| 1⅝ to 1⅞-inch..... | 2.75c |
| 1¹⁵⁄₁₆ to 2⅞-inch..... | 2.60c |
| 2¹⁵⁄₁₆ to 7-inch..... | 2.45c |

## Alloy Steel Bars □

Hot Rolled

| | |
|---|---|
| Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem ..... | 2.55c |

| Alloy S.A.E. | Diff. | Alloy S.A.E. | Diff. |
|---|---|---|---|
| 2000 | 0.25 | 3100 | 0.55 |
| 2100 | 0.55 | 3200 | 1.35 |
| 2300 | 1.50 | 3300 | 3.80 |
| 2500 | 2.25 | 3400 | 3.20 |

| | |
|---|---|
| 4100 .15 to .25 Mo..... | 0.50 |
| 4600 .20 to .30 Mo. 125-1.75 Ni. ..... | 1.05 |
| 5100 .80-1.10 Cr. ..... | 0.45 |
| 5100 Cr. spring ..... | base |
| 6100 bars ..... | 1.20 |
| 6100 spring ..... | 0.70 |
| Cr., Ni., Van. ..... | 1.50 |
| Carbon van. ..... | 0.95 |
| 9250.....carbon base plus extras | |

## Strip and Hoops □

| | |
|---|---|
| Hot strip to 23⅞-in. Pittsburgh ..... | 2.00c |
| Chicago, base..... | 2.10c |
| Birmingham, base | 2.15c |
| Detroit, delivered | 2.20c |
| Phila., delivered.. | 2.29c |
| New York, del..... | 2.33c |
| Cooperage hoop, Pittsburgh ..... | 2.10c |
| Chicago ..... | 2.20c |
| Cold-rolled strip, Pitts., Cleve. ..... | 2.80c |
| Worcester, Mass. | 3.00c |

## Rails, Track Material □

(Gross Tons)

| | |
|---|---|
| Standard rails, mill | $36.37½ |
| Relay rails, Pitts. 24-45 lbs. ..... | $26.00 |
| 50-60 lbs. ..... | $23.00 |
| 70-75 lbs. ..... | $18.00 |
| 80-85 lbs. ..... | $25.00 |
| 100 lbs. ..... | $26.00 |
| Light rails, billet qual., Pitts., Chi.. | $35.00 |
| Do., reroll. qual... | $34.00 |
| Angle bars, mills.... | 2.55c |
| Spikes, R. R. base.. | 2.40c |
| Track bolts, base.... | 3.55c |
| Tie plates, base ..... | 1.90c |

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

## Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

| | |
|---|---|
| All sizes, cut thread .....70 off | |
| Rolled thread, ½ x 6 and smaller .....70 off | |

MACHINE BOLTS

| | |
|---|---|
| All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts .....70 off | |
| Tire bolts .....60 off | |
| *Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size. | |
| Rolled thread machine bolts, ½ x 6 and smaller, 70 off | |
| Step bolts .....66 off | |
| Elevator bolts .....66 off | |

NUTS

| | |
|---|---|
| Semifinished .....70 off | |

HEXAGON CAP SCREWS

| | |
|---|---|
| Milled .....80-10-10 off | |
| Upset 1-in., smaller .....85 off | |

SQUARE HEAD SET SCREWS

| | |
|---|---|
| Upset, 1-in., smaller....75-10 off | |
| Do., larger than 1-in..75-10 off | |
| Headless set screws .....75 off | |

## Rivets, Wrought Washers

| | |
|---|---|
| Struc., c. l., Pittsburgh, Cleveland | 3.00c |
| Struc., c. l., Chicago | 3.10c |
| ⅞-in. and smaller, Pitts., Chi., Cleve..70 and 5 off | |
| Wrought washers, Pitts., Chi., Phila.. | 6.00 off |

## Cut Nails □ □

| | |
|---|---|
| Cut nails, Pitts.; (10% discount on size extras) | $2.75 |
| Do. less carloads, 5 kegs or more, no discount on size extras ..... | $3.05 |
| Do. less than 5 kegs; no discount on size extras | $3.20 |

## Piling □ □

| | |
|---|---|
| Pittsburgh ..... | 2.15c |
| Chicago, Buffalo ..... | 2.25c |

## Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

## Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD
Steel

| In. | Blk. | Gal. |
|---|---|---|
| ¼ and ⅜ | 53½ | 35 |
| ½ | 58½ | 47 |
| ¾ | 62 | 52 |
| 1—3 | 64 | 55 |

Iron

| | | |
|---|---|---|
| ½ | 31½ | 15 |
| ¾ | 36½ | 20½ |
| 1—1¼ | 39½ | 25½ |
| 2 | 41½ | 26 |

LAP WELD
Steel

| | | |
|---|---|---|
| 2 | 60 | 51 |
| 2½—3 | 63 | 54 |
| 3½—6 | 65 | 56 |
| 7 and 8 | 64 | 54 |
| 9 and 10 | 63½ | 53½ |

Iron

| | | |
|---|---|---|
| 2 | 37 | 22½ |
| 2½—3½ | 38 | 25 |
| 4—8 | 40 | 28½ |

LINE PIPE
Steel

| | |
|---|---|
| ⅛-inch, butt weld ..... | 50½ |
| ¼—⅜, buttweld..... | 52½ |
| ½, butt weld ..... | 57½ |
| ¾, butt weld ..... | 61 |
| 1—3, butt weld ..... | 63 |
| 2-inch, lap weld ..... | 59 |
| 2½—3, lap weld ..... | 62 |
| 3½—6, lap weld ..... | 64 |
| 7—8, lap weld ..... | 63 |

Iron

⅛—1½-inch, black and galv. take 4 pts. over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES
*C. L. Discounts, f.o.b. Pitts.*

| *Lap Weld Steel* | | *Charcoal Iron* | |
|---|---|---|---|
| 2—2¼ | 33 | 1¾ | 8 |
| 2½—2¾ | 40 | 2—2¼ | 13 |
| 3 | 47 | 2½—2¾ | 16 |
| 3¼—3½ | 50 | 3 | 17 |
| 4 | 52 | 3¾—3½ | 18 |
| 4½—5 | 42 | 4 | 20 |
| | | 4½ | 21 |

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

## Seamless Tubing □

*Cold drawn; f.o.b. mill disc.*

| | |
|---|---|
| 100 ft. or 150 lbs..... | 32% |
| 15,000 ft. or 22,500 lbs..... | 70% |

## Cast Iron Water Pipe □

*Class B Pipe—Per Net Ton*

| | |
|---|---|
| 6-in., & over, Birm.. | $36.00-37.00 |
| 4-in., Birmingham.. | 39.00-40.00 |
| 4-in., Chicago ..... | 47.00-48.00 |
| 6 to 24-in., Chicago | 44.00-45.00 |
| 6-in., & over, east. fdy. | 40.00 |
| Do., 4-in. ..... | 43.00 |

Class A pipe $3 over Class B. Stnd. fitgs., Birm. base....$90.00

## Semifinished Steel □

BILLETS AND BLOOMS
*4 x 4-inch base; gross ton*

| | |
|---|---|
| Pitts., Chi., Cleve., and Youngstown.. | $29.00 |
| Philadelphia ..... | 34.30 |
| Duluth ..... | 32.00 |
| Forging, Pitts., Chi. and Buffalo ..... | 34.00 |
| Forging, Duluth .... | 37.00 |

SHEET BARS

| | |
|---|---|
| Pitts., Cleve., Young., Chi., Buff., Canton, O. ..... | 30.00 |

SLABS

| | |
|---|---|
| Pitts., Cleve., Young. | 29.00 |

WIRE RODS

| | |
|---|---|
| Pitts., Cleveland .... | 35.00 |
| Chicago ..... | 39.00 |
| Worcester, Mass. .... | 40.00 |

SKELP

| | |
|---|---|
| Pitts., Chicago .... | 1.70c |

## Coke □ □ □

*Price Per Net Ton*

BEEHIVE OVENS

| | |
|---|---|
| Connellsville fur..... | 3.60- 3.85 |
| Connellsville fdry... | 4.60 |
| Connell. prem. fdy... | 5.35 |
| New River fdry..... | 6.00 |
| Wise county fdry... | 4.25- 5.00 |
| Wise county fur.... | 3.50- 4.25 |

BY-PRODUCT FOUNDRY

| | |
|---|---|
| Newark, N. J., del. | 8.71- 9.31 |
| Chi., ov., outside del. | 8.50 |
| Chicago, del. ..... | 9.25 |
| New England, del... | 10.50 |
| St. Louis, del. ..... | 9.25 |
| Birmingham, ovens | 5.50 |
| Indianapolis, del..... | 8.75 |
| Cincinnati, del..... | 9.30 |
| Cleveland, del. ..... | 9.25 |
| Buffalo, ovens ..... | 7.50- 8.00 |
| Detroit, ovens ..... | 8.50 |
| Philadelphia, del..... | 9.00 |

## Coke By-Products □

Per gallon, producers' plants.
Tank lots

| | Spot |
|---|---|
| Pure benzol ..... | $0.19 |
| 90 per cent benzol | $0.19 |
| Toluol ..... | 0.30 |
| Solvent naphtha..... | 0.26 |
| Commercial xylol.... | 0.26 |

Per lb. f.o.b. New York

| | |
|---|---|
| Phenol (200 lb. drums).. | 0.163c |
| Do. (100 lbs.) ..... | 0.173c |

Eastern Plants, Per Pound,

| | |
|---|---|
| †Naphthalene flakes and balls, in bbl. .. | 6.00 |

Per 100 lb. Atlantic seaboard

| | |
|---|---|
| Sulphate of ammonia | $1.25 |

†Western prices ½-cent up.

## Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

| | No. 2 Fdry. | Malleable | Basic | Bessemer |
|---|---|---|---|---|
| Basing Points: | | | | |
| Bethlehem, Pa. | $19.50 | $20.00 | $19.00 | $20.50 |
| Birdsboro, Pa. | 19.50 | 20.00 | 19.00 | 20.50 |
| Swedeland, Pa. | 19.50 | 20.00 | 19.00 | 20.50 |
| Sparrows Point, Md. | 19.50 | ..... | 19.00 | ..... |
| From Swedeland, Pa., del. to Phila. | 20.26 | 20.76 | 19.76 | ..... |
| From Bethlehem, del. to Brooklyn | 21.77 | 22.27 | ..... | ..... |
| From Bethlehem, del. to Newark, N. J. | 20.89 | 21.39 | ..... | ..... |
| Basing Point: | | | | |
| Everett, Mass. | 19.50 | 20.00 | 19.00 | 20.50 |
| From Everett, del. to Boston | 20.00 | 20.50 | 19.50 | 21.00 |
| Basing Point: | | | | |
| Buffalo | 18.50 | 19.00 | 17.50 | 19.50 |
| From Buffalo, del. to Boston | 20.00 | 20.50 | 19.50 | 21.00 |
| Basing Points: | | | | |
| Neville Island, Pa. | 18.50 | 18.50 | 18.00 | 19.00 |
| Sharpsville, Pa. | 18.50 | 18.50 | 18.00 | 19.00 |
| Youngstown, O. | 18.50 | 18.50 | 18.00 | 19.00 |
| From Neville Island, Pa., del. to Pittsburgh district | (Neville Island base, plus 63c to $1.13 switching charges) | | | |
| Basing Points: | | | | |
| Erie, Pa. | 18.50 | 19.00 | 18.00 | 19.50 |
| Cleveland | 18.50 | 18.50 | 18.00 | 19.00 |
| Toledo, O. | 18.50 | 18.50 | 18.00 | 19.00 |
| Detroit | 18.50 | 18.50 | 18.00 | 19.00 |
| From Detroit, del. to Saginaw, Mich. | 20.60 | 20.60 | 20.10 | 21.10 |
| From Cleveland, del. to Akron, Canton, O. | 19.76 | 19.76 | 19.26 | 20.26 |
| From Toledo, del. to Mansfield, O. | 20.26 | 20.26 | 19.76 | 20.76 |
| Basing Point: | | | | |
| Jackson, O. | 20.25 | 20.25 | 19.75 | ..... |
| Hamilton, O. | 18.50 | 18.50 | 18.00 | ..... |
| From Hamilton, del. to Cincinnati | 19.51 | 19.51 | 19.01 | ..... |
| Do., del. to Indianapolis | 20.77 | 20.77 | 20.27 | 21.27 |
| Basing Points: | | | | |
| Duluth | 19.00 | 19.00 | ..... | 19.50 |
| Chicago | 18.50 | 18.50 | 18.00 | 19.00 |
| Granite City, Ill. | 18.50 | 19.00 | 18.00 | ..... |
| From Duluth, del. to St. Paul | 20.94 | 20.94 | ..... | 21.44 |
| From Chicago, del. to Milwaukee | 19.50 | 19.50 | 19.00 | 20.00 |
| From Chicago, Toledo or Detroit, del. to Muskegon, Mich. | 21.40 | 21.40 | 20.90 | 21.90 |
| From Granite City, del. to St. Louis | 19.00 | 19.50 | 18.50 | ..... |
| Basing Point: | | | | |
| †Birmingham, Ala. | 14.50 | ..... | 13.50 | 19.00 |
| From Birmingham, del. to: | | | | |
| Boston | 19.62 | ..... | 19.50 | ..... |
| Newark, N. J. | 20.51 | ..... | ..... | ..... |
| Brooklyn, N. Y. | 21.39 | ..... | ..... | ..... |
| Baltimore | 20.02 | ..... | 19.90 | ..... |
| Philadelphia | 19.88 | ..... | 19.76 | ..... |
| Cleveland | 18.62 | ..... | 18.50 | ..... |
| Cincinnati | 19.13 | ..... | 19.01 | ..... |
| Chicago | ††18.72 | ..... | 18.60 | ..... |
| St. Louis | 18.62 | ..... | 18.50 | ..... |

†Southern delivery only. Prices at northern points are adjusted to quotations on northern iron. ††Over 0.70 phos.

| | |
|---|---|
| Basing Point: | |
| Provo, Utah | 17.50 ..... 17.00 ..... |

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50

†Off grade material is $19.50

Philadelphia, standard and copper bearing ..... 24.63

| GRAY FORGE | | CHARCOAL | |
|---|---|---|---|
| *Valley furnace | 18.25 | Lake Superior fur. | 21.00 |
| *Pitts. dist. fur. | 18.25 | Do., del. Chicago | 24.04 |

SILVERY

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

## Iron Ore □ □

LAKE SUPERIOR ORE

*Gross ton, 51½% Lower Lake Ports*

| | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi nonbess. | 4.50 |
| High phosphorus | 4.40 |
| Mesabi bessemer | 4.65 |
| Old range nonbess. | 4.65 |

EASTERN LOCAL ORES

*Cents, unit, del. E. Pa.*

| | |
|---|---|
| Foundry and basic, 56-63% con. (nom.) | 8.00- 9.00 |
| Cop.-free low phos. 58-60% (nom.) | 10.00-10.50 |

FOREIGN ORE

*Cents per unit, f.a.s. Atlantic ports (nominal)*

| | |
|---|---|
| Foreign manganiferous ore, 45.55% iron, 6-10% man. | 10.00 |
| No. Afr. & low phos. | 9.50 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 9.50 |
| Spanish No. Africa basic, 50 to 60% | 9.00 |
| Tungsten, spot, sh. ton unit, duty pd. | $17.25-17.75 |
| N. F. fdy., 55% | 7.00 |
| Chrome ore, 48% gross ton, c.i.f. | $18.00 |

## Manganese Ore □

*(Nominal)*

Prices, not including duty, cents per unit, cargo lots.

| | |
|---|---|
| Caucasian, 52-55% | 24.00 |
| So. African, 52% | 24.00 |
| So. Afr., 49-51% | 22.00 |
| Indian, 58-50% | nominal |
| Indian, 48-50% | nominal |

## Refractories □ □

*Per 1000 f.o.b. Works*

FIRE CLAY BRICK

*First Quality*

| | |
|---|---|
| Pa., Ill., Ky., Md., Ga., Mo. | $45.00 |
| Alabama | 48.00 |

*Second Quality*

| | |
|---|---|
| Pa., Ill., Ky., Md., Mo., Ga., Ala. | 40.00 |

*Ohio*

| | |
|---|---|
| First quality | $40.00 |
| Intermediary | 36.00 |
| Second quality | 25.00 |

MALLEABLE BUNG BRICK

| | |
|---|---|
| All bases | 50.00 |

SILICA BRICK

| | |
|---|---|
| Pennsylvania | $45.00 |
| Joliet, E. Chicago | 54.00 |
| Birmingham, Ala. | 52.00 |

MAGNESITE

| | |
|---|---|
| Dead burned grain, Chester, Pa., Baltimore bases, net | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

BASIC BRICK

*Net ton, f.o.b. Baltimore, Plymouth Meeting, Pa. Chester, Pa.*

| | |
|---|---|
| Magnesite brick | $65.00 |
| Chrome brick | 45.00 |
| Chemically bonded magnesite | 55.00 |

## Fluorspar, 85-5 □ □

| | |
|---|---|
| Washed gravel, duty paid, tide, net ton | $19.00 |
| Washed gravel, f.o.b. Ill., Ky., net ton, carloads | $17.00 |

## Ferroalloys □ □

*Dollars, except Ferrochrome*

| | |
|---|---|
| Ferromanganese, 78-82% tidewater, duty paid | 85.00 |
| Do., Balti. base | 85.00 |
| Do., del. Pittsburgh | 89.79 |
| Spiegeleisen, 19-20%, dom. fur. spot† | 26.00 |
| Ferrosilicon 50%, freight all., cl. | 77.50 |
| Do., less carload | 85.00 |
| Do., 75 per cent. | 126-130.00 |
| Spot, $5 a ton higher. | |
| Silicomang., 2½ carb. | 90.00 |
| 2% carbon | 95.00 |
| 1% carbon | 105.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del. | 10.00 |
| Ferrotungsten, stand., lb. cont. del. | 1.35- 1.45 |
| Ferrovanadium, 35 to 40% lb., cont., on analysis | 2.70- 2.90 |
| Ferrotitanium, c. l., prod. plant, frt. allow., net ton | 137.50 |
| Spot, 1 ton, frt. allow., lb. | 7.00 |
| Do., under 1 ton | 7.50 |
| *Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage | 42.00 |
| *Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage | 55.00 |
| Ferromolybdenum, stand. 50-60%, lb. | 0.95 |
| Molybdate, lb. cont. | 0.80 |

†Carloads, Quan. diff. apply.

## Nonferrous Mill Products

*F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper*

Sheets

| | |
|---|---|
| *Yellow brass (high) | 14.50 |
| *Copper, hot rolled | 16.00 |
| Lead, cut, to jobbers | 7.75 |
| Zinc, 100-lb. base | 9.00 |

Tubes and Pipes

| | |
|---|---|
| *High yellow brass | 17.00 |
| *Seamless copper | 17.25 |

Rods

| | |
|---|---|
| *High yellow brass | 13.00 |
| *Copper, hot rolled | 13.25 |

Anodes

| | |
|---|---|
| *Copper untrimmed | 13.75 |

Wire

| | |
|---|---|
| Yellow brass (high) | 15.00 |

## Old Metals □ □

*Deal, buying prices, cents lb.*

No. 1 Composition Red Brass

| | |
|---|---|
| *New York | 4.87½- 5.12½ |
| *Chicago | 4.50- 4.75 |
| *Cleveland | 4.75- 5.25 |
| St. Louis | 4.75- 5.00 |

Heavy Copper and Wire

| | |
|---|---|
| *New York | 6.37½-6.62½ |
| *Chicago, No. 1 | 6.25- 6.50 |
| *Cleveland | 5.75- 6.25 |
| St. Louis | 5.50- 5.75 |

Composition Brass Borings

| | |
|---|---|
| New York | 4.62½-4.87½ |

Light Copper

| | |
|---|---|
| *New York | 5.25- 5.50 |
| *Chicago | 5.00- 5.25 |
| *Cleveland | 5.00- 5.25 |
| *St. Louis | 4.75- 5.00 |

Light Brass

| | |
|---|---|
| Chicago | 2.50- 2.75 |
| *Cleveland | 2.75- 3.25 |

Lead

| | |
|---|---|
| New York | 3.00- 3.25 |
| Cleveland | 3.00- 3.25 |
| Chicago | 2.75- 3.00 |
| *St. Louis | 3.00- 3.15 |

Zinc

| | |
|---|---|
| New York | 2.00- 2.25 |
| Cleveland | 2.00- 2.25 |
| St. Louis | 2.50- 2.75 |

Aluminum

| | |
|---|---|
| Clips, soft, Clev. | 11.50-12.50 |
| Borings, Cleveland | 6.00- 6.25 |
| Mixed, cast, Cleve. | 9.25- 9.75 |
| *Mixed cast, St. L. | 9.00-10.00 |

## Secondary Metals □

| | |
|---|---|
| Brass ingot. 85-5-5-5 | 8.75 |
| Remelt al. St. No. 12 | 15.00 |

# Iron and Steel Scrap Prices

*Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated*

**HEAVY MELTING STEEL**

| | |
|---|---|
| Birmingham | 10.00-10.50 |
| Boston, dealers | 5.50- 5.75 |
| Buffalo, No. 1 | 11.00-11.50 |
| Buffalo, No. 2 | 9.50-10.00 |
| Chicago, No. 1 | 9.50-10.00 |
| Cleveland, No. 1 | 9.00- 9.50 |
| Cleveland, No. 2 | 8.50- 9.00 |
| Detroit, No. 1 | 8.00- 8.50 |
| Detroit, No. 2 | 7.00- 7.50 |
| Eastern Pa. | 10.50 |
| Eastern Pa., No. 2 | 9.00- 9.50 |
| Federal, Ill. | 7.50- 800. |
| Granite City, R. R. | 7.50- 8.00 |
| Granite City, No. 2 | 6.75- 7.25 |
| N. Y., deal. R. R. | 8.00 |
| N. Y., deal. No. 2 | 6.50 |
| Pittsburgh, No. 1 | 11.50-12.00 |
| Valleys, No. 1 | 11.50-12.00 |

**COMPRESSED SHEETS**

| | |
|---|---|
| Buffalo, dealers | 9.50-10.00 |
| Chicago, factory | 8.50- 9.00 |
| Cleveland | 8.50- 9.00 |
| Detroit | 8.00- 8.50 |
| E. Pa., new mat. | 9.50-10.00 |
| Pittsburgh | 11.00-11.50 |
| St. Louis | 7.00- 7.50 |
| Valleys | 11.00-11.50 |

**BUNDLED SHEETS**

| | |
|---|---|
| Buffalo | 7.00- 7.50 |
| Cincinnati, del. | 6.50- 7.00 |
| Cleveland | 7.00- 7.50 |
| Pittsburgh | 10.00-10.50 |
| St. Louis | 4.50- 5.00 |

**SHEET CLIPPINGS LOOSE**

| | |
|---|---|
| Chicago | 5.00- 5.50 |
| Cincinnati | 5.00- 5.50 |
| Detroit | 4.50- 5.00 |
| St. Louis | 3.75- 4.25 |

**STEEL RAILS, SHORT**

| | |
|---|---|
| Birmingham | 11.50-12.50 |
| Buffalo | 13.00-13.50 |
| Chicago (3 ft.) | 11.00-11.50 |
| Chicago (2 ft.) | 11.50-12.00 |
| Cincinnati, del. | 10.50-11.00 |
| Detroit | 10.00-10.50 |
| Pitts., open-hearth, 3 ft. and less | 13.75-14.25 |
| St. Louis, 2 ft.& less | 9.50-10.00 |

**STEEL RAILS, SCRAP**

| | |
|---|---|
| Boston | 5.50- 5.75 |
| Chicago | 9.50-10.00 |
| Pittsburgh | 11.50-12.00 |

**STOVE PLATE**

| | |
|---|---|
| Birmingham | 7.00- 8.00 |
| Boston, dealers | 3.25- 3.75 |
| Buffalo | 9.00- 9.50 |
| Chicago, net | 7.00- 7.50 |
| Cincinnati, dealers | 5.00- 5.50 |
| Detroit, net | 6.00- 6.50 |
| Eastern Pa. | 8.50- 9.00 |
| N. Y., deal. fdry. | 6.00 |
| St. Louis | 6.50- 7.00 |

**COUPLERS, SPRINGS**

| | |
|---|---|
| Buffalo | 13.00-13.50 |
| Chicago, springs | 11.00-11.50 |
| Eastern Pa. | 13.50-14.00 |
| Pittsburgh | 13.50-14.00 |
| St. Louis | 8.00- 8.50 |

**ANGLE BARS—STEEL**

| | |
|---|---|
| Chicago | 10.50-11.00 |
| St. Louis | 9.00- 9.50 |

**LOW PHOSPHORUS**

| | |
|---|---|
| Buffalo, billets and bloom crops | 13.00-14.00 |
| Cleveland, billet, bloom crops | 13.00-13.50 |
| Eastern Pa. crops | 15.00-15.50 |
| Pittsburgh, billet, bloom crops | 13.75-14.25 |
| Pittsburgh, sheet bar crops | 13.25-13.75 |

**FROGS, SWITCHES**

| | |
|---|---|
| Chicago | 9.50-10.00 |
| St. Louis, cut | 7.50- 8.00 |

**SHOVELING STEEL**

| | |
|---|---|
| Chicago | 9.50-10.00 |
| Federal, Ill. | 7.00- 7.50 |
| Granite City, Ill. | 6.50- 7.00 |

**RAILROAD WROUGHT**

| | |
|---|---|
| Birmingham | 6.50- 7.00 |
| Boston, dealers | 6.00- 6.50 |
| Buffalo, No. 1 | 7.50- 8.00 |
| Buffalo, No. 2 | 11.00-11.50 |
| Chicago, No. 1 net | 8.25- 8.75 |
| Chicago, No. 2 | 9.50-10.00 |
| Cincinnati, No. 2 | 7.50- 8.00 |
| Eastern Pa. | 10.00 |
| N. Y., No. 1 deal. | 7.25- 7.75 |
| St. Louis, No. 1 | 6.00- 6.50 |
| St. Louis, No. 2 | 6.50- 7.00 |

**SPECIFICATION PIPE**

| | |
|---|---|
| Boston | 4.50- 4.75 |
| Eastern Pa. | 9.00 |
| New York, dealers | 3.50- 3.75 |

**BUSHELING**

| | |
|---|---|
| Buffalo, No. 1 | 9.50-10.00 |
| Chicago, No. 1 | 8.50- 9.00 |
| Cinci., No. 1 deal. | 6.00- 6.50 |
| Cincinnati, No. 2 | 7.00- 7.25 |
| Cleveland, No. 2 | 7.00- 7.25 |
| Detroit, No. 1 new | 7.00- 7.50 |
| Valleys, new No. 1 | 11.00-11.50 |

**MACHINE TURNINGS**

| | |
|---|---|
| Bimingham | 4.50- 5.00 |
| Boston, dealers | 1.25- 1.50 |
| Buffalo | 5.00- 5.50 |
| Chicago | 5.50- 6.00 |
| Cincinnati, dealers | 4.50- 5.00 |
| Cleveland | 5.00- 5.50 |
| Detroit | 4.50- 5.00 |
| Eastern Pa. | 5.50- 6.00 |
| New York, dealers | 1.50- 1.75 |
| Pittsburgh | 7.50- 8.00 |
| St. Louis | 4.00- 4.50 |
| Valleys | 7.50- 8.00 |

**BORINGS AND TURNINGS**

*For Blast Furnace Use*

| | |
|---|---|
| Boston, dealers | 3.25- 3.50 |
| Buffalo | 6.50- 7.00 |
| Cincinnati, dealers | 4.50- 5.00 |
| Cleveland | 5.50- 6.00 |
| Detroit | 5.50- 6.00 |
| Eastern Pa. | 6.00 |
| New York, dealers | 1.50- 1.75 |
| Pittsburgh | 7.75- 8.25 |

**CAST IRON BORINGS**

| | |
|---|---|
| Birmingham, plain | 4.50- 5.00 |
| Boston, chemical | 8.50- 9.00 |
| Boston, dealers | 3.25- 3.50 |
| Buffalo | 6.50- 7.00 |
| Chicago | 5.50- 6.00 |
| Cincinnati, dealers | 4.50- 5.00 |
| Cleveland | 6.00- 6.50 |
| Detroit | 5.50- 6.00 |
| E. Pa., chemical | 12.00-15.00 |
| New York, dealers | 1.50- 1.75 |
| Pittsburgh | 7.75- 8.25 |
| St. Louis | 4.00- 4.50 |

**PIPE AND FLUES**

| | |
|---|---|
| Cincinnati, dealers | 4.75- 5.25 |

**RAILROAD GRATE BARS**

| | |
|---|---|
| Buffalo | 6.50- 7.00 |
| Chicago, net | 6.75- 7.25 |
| Cincinnati | 4.50- 5.00 |
| Eastern Pa. | 8.50 |
| New York, dealers | 5.00- 5.50 |
| St. Louis | 4.25- 4.75 |

**FORGE FLASHINGS**

| | |
|---|---|
| Boston, dealers | 3.75- 4.25 |
| Buffalo | 9.50-10.00 |
| Cleveland | 8.00- 8.50 |
| Detroit | 6.50- 7.00 |

**FORGE SCRAP**

| | |
|---|---|
| Boston, dealers | 4.00- 4.50 |
| Chicago, heavy | 11.00-11.50 |
| Eastern Pa. | 9.00- 9.50 |

**ARCH BARS, TRANSOMS**

| | |
|---|---|
| St. Louis | 11.25-11.75 |

**AXLE TURNINGS**

| | |
|---|---|
| Boston, dealers | 4.50- 5.00 |
| Buffalo | 9.00- 9.50 |
| Chicago, elec. fur. | 8.50- 9.00 |
| Cleveland | 6.00- 6.50 |
| Eastern Pa. | 11.00 |
| St. Louis | 6.50- 7.00 |

**STEEL CAR AXLES**

| | |
|---|---|
| Birmingham | 10.50-11.50 |
| Boston, ship, point. | 9.00- 9.50 |
| Buffalo | 13.00 13.50 |
| Chicago, net | 10.75-11.25 |
| Eastern Pa. | 14.00-15.00 |
| St. Louis | 10.00-10.50 |

**SHAFTING**

| | |
|---|---|
| Boston, ship point. | 10.25-10.50 |
| Eastern Pa. | 16.00 |
| New York, dealers | 10.75-11.25 |
| St. Louis | 10.50-11.00 |

**CAR WHEELS**

| | |
|---|---|
| Birmingham, iron | 8.50- 9.50 |
| Boston, iron deal. | 6.50- 6.75 |
| Buffalo, iron | 12.25-12.75 |
| Buffalo, steel | 13.00-13.50 |
| Chicago, iron | 10.00-10.50 |
| Chicago, rolled steel | 10.50-11.00 |
| Cincinnati, iron | 8.00- 8.50 |
| Eastern Pa., iron | 11.50-12.00 |
| Eastern Pa., steel | 13.50-14.00 |
| Pittsburgh, iron | 11.00-11.50 |
| Pittsburgh, steel | 13.50-14.00 |
| St. Louis, iron | 7.50- 8.00 |
| St. Louis, steel | 8.50- 9.00 |

**NO. 1 CAST SCRAP**

| | |
|---|---|
| Birmingham | 9.00- 9.50 |
| Boston, No. 2 | 5.50- 6.00 |
| Boston, tex. con. | 10.50-11.00 |
| Buffalo, cupola | 10.00-10.50 |
| Buffalo, mach. | 11.50-12.00 |
| Chicago, agri. net | 7.50- 8.00 |
| Chicago, mach. net | 8.50- 9.00 |
| Chi., railroad net | 8.00- 8.50 |
| Cinci., mach. cup | 9.50-10.00 |
| Cleveland, cupola | 11.75-12.25 |
| Detroit, net | 8.50- 9.00 |
| Eastern Pa., cupola | 12.00 |
| Pittsburgh, cupola | 13.00-13.50 |
| San Francisco, del. | 13.50-14.00 |
| Seattle | 7.00- 8.50 |
| St. Louis, No. 1 | 7.00- 7.50 |
| St. L., No. 1 mach. | 7.00- 7.50 |

**HEAVY CAST**

| | |
|---|---|
| Boston, del. | 5.50- 5.75 |
| Buffalo, break | 8.50- 9.00 |
| Cleveland, break. | 8.25- 8.75 |
| Detroit, break. | 6.50- 7.00 |
| Detroit, auto net | 9.00- 9.50 |
| Eastern Pa. | 10.50 |
| N. Y., No. 1, deal. | 7.00- 7.50 |
| N. Y., break. deal. | 6.50- 7.00 |
| Pittsburgh | 10.00-10.50 |

**MALLEABLE**

| | |
|---|---|
| Boston, consum. | 12.50-12.75 |
| Buffalo | 12.50-13.00 |
| Chicago, R. R. | 10.50-11.00 |
| Cincinnati, agri. del. | 8.00- 8.50 |
| Cinci., R. R. del. | 9.00- 9.50 |
| Cleveland, rail | 12.00-12.50 |
| Detroit, auto | 8.50- 9.00 |
| St. Louis, R. R. | 8.75- 9.25 |
| Eastern Pa., R. R. | 11.50-12.00 |

**RAILS FOR ROLLING**

*5 feet and over*

| | |
|---|---|
| Birmingham | 10.50-11.00 |
| Boston, dealers | 7.00- 7.25 |
| Buffalo | 12.00-12.50 |
| Chicago | 11.00-11.50 |
| Eastern Pa. | 12.00-13.00 |
| New York, dealer | 7.50- 8.00 |
| St. Louis | 9.00- 9.50 |

**LOCOMOTIVE TIRES**

| | |
|---|---|
| Chicago (cut) | 11.00-11.50 |
| St. Louis, No. 1 | 9.25- 9.75 |

**LOW. PHOS. PUNCHINGS**

| | |
|---|---|
| Buffalo | 13.75-14.25 |
| Chicago | 11.00-11.50 |
| Eastern Pa. | 14.50-15.00 |
| Pittsburgh | 13.25-13.75 |

# Nonferrous Metal Prices of the Week

*Spot unless otherwise specified. Cents per pound*

| | Copper: Electro., del. Conn. | Copper: Lake, del. Midwest | Copper: Casting, refinery | Straits Tin: New York Spot | Straits Tin: New York Futures | Lead: New York | Lead: East St. L. | Zinc: St. L. | Aluminum: 98-99% | Antimony: Spot, N. Y. | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June 9 | 8.50 | 8.62½ | 8.25 | 52.00 | 51.95 | 4.00 | 3.85 | 4.25 | *22.90 | 7.90 | 36.00 |
| June 11 | 8.50 | 8.62½ | 8.25 | 51.50 | 51.50 | 4.00 | 3.85 | 4.25 | *22.90 | 7.90 | 36.00 |
| June 12 | 9.00 | 9.12½ | 8.75 | 51.25 | 51.25 | 4.00 | 3.85 | 4.25 | *22.90 | 7.90 | 36.00 |
| June 13 | 9.00 | 9.12½ | 8.75 | 51.20 | 51.25 | 4.00 | 3.85 | 4.20 | *22.90 | 7.90 | 36.00 |
| June 14 | 9.00 | 9.12½ | 8.75 | 50.50 | 50.50 | 4.00 | 3.85 | 4.20 | *22.90 | 7.85 | 36.00 |
| June 15 | 9.00 | 9.12½ | 8.75 | 50.50 | 50.50 | 4.00 | 3.85 | 4.20 | *22.90 | 7.85 | 36.00 |

*Nominal range 19.00c to 22.90c.

# Warehouse Iron and Steel Prices

*Cents per pound for delivery within metropolitan districts of cities specified*

| STEEL BARS | |
|---|---|
| Baltimore*.... | 3.00c |
| Boston†† ..... | 3.05c |
| Buffalo ..... | 2.95c |
| Chattanooga.. | 3.41c |
| Chicago ..... | 3.05c |
| Cincinnati .... | 3.25c |
| Cleveland ..... | 3.05c |
| Detroit ..... | 3.13½c |
| Houston ..... | 3.00c |
| Los Angeles.. | 3.70c |
| New Orleans | 3.40c |
| New York‡(d) | 3.32c |
| Pittsburgh(h) | 3.00c |
| Philadelphia* | 3.00c |
| San Francisco | 3.60c |
| Seattle ..... | 3.60c |
| St. Louis ..... | 3.29c |
| St. Paul ..... | 3.00c |
| Tulsa ..... | 3.25c |

| IRON BARS | |
|---|---|
| Portland ..... | 3.40c |
| Baltimore*.... | 3.00c |
| Chattanooga.. | 3.41c |
| Chicago ..... | 2.75c |
| Cincinnati .... | 3.25c |
| New York‡(d) | 3.32c |
| Philadelphia* | 3.00c |
| St. Louis ..... | 3.29c |
| Tulsa ..... | 3.25c |

| REINFORC. BARS | |
|---|---|
| Buffalo ..... | 1.95c |
| Chattanooga.. | 3.41c |
| Chicago .....2.10c-2.60c | |
| Cleveland (c) | 1.97½c |
| Cincinnati .... | 3.10c |
| Houston ..... | 3.25c |
| Los Ang., cl... | 2.15c |
| New Orleans | 3.50c |
| Pitts., plain(h) | 3.15c |
| Pitts., twisted squares (h) | 3.27½c |
| San Francisco | 2.45c |
| Seattle ..... | 3.50c |
| St. Louis ..... | 3.44c |
| Tulsa ..... | 3.25c |
| Young. .....2.30c-2.60c | |

| SHAPES | |
|---|---|
| Baltimore*.... | 3.00c |
| Boston†† ..... | 3.22c |
| Buffalo ..... | 3.20c |
| Chattanooga.. | 3.61c |
| Chicago ..... | 3.25c |
| Cincinnati .... | 3.45c |
| Cleveland ..... | 3.36c |
| Detroit ..... | 3.45c |
| Houston ..... | 3.00c |
| Los Angeles.. | 3.70c |
| New Orleans | 3.60c |
| New York(d) | 3.42c |
| Philadelphia* | 3.00c |
| Pittsburgh(h) | 3.20c |
| Portland ..... | 3.55c |
| San Francisco | 3.55c |
| Seattle ..... | 3.55c |
| St. Louis ..... | 3.49c |
| St. Paul ..... | 3.25c |
| Tulsa ..... | 3.50c |

| PLATES | |
|---|---|
| Baltimore*.... | 3.00c |
| Boston†† ..... | 3.23c |
| Buffalo ..... | 3.20c |
| Chattanooga.. | 3.61c |
| Chicago ..... | 3.25c |
| Cincinnati .... | 3.45c |
| Cleveland, ¼-in. and over ..... | 3.36c |
| Detroit ..... | 3.30c |
| Detroit, ⅜-in. | 3.65c |
| Houston ..... | 3.00c |
| Los Angeles.. | 3.70c |
| New Orleans | 3.60c |
| New York(d) | 3.45c |
| Philadelphia* | 3.00c |
| Phila. floor.... | 5.00c |
| Pittsburgh(h) | 3.20c |
| Portland ..... | 3.55c |
| San Francisco | 3.55c |
| Seattle ..... | 3.55c |
| St. Louis ..... | 3.49c |
| St. Paul ..... | 3.25c |
| Tulsa ..... | 3.50c |

| NO. 10 BLUE | |
|---|---|
| Baltimore*.... | 3.20c |
| Boston†† ..... | 3.40c |
| Buffalo ..... | 3.10c |
| Chattanooga.. | 3.51c |
| Chicago ..... | 3.20c |
| Cincinnati .... | 3.35c |
| Cleveland ..... | 3.26c |
| Det., 8-10 ga. | 3.28½ |
| Houston ..... | 3.35c |
| Los Angeles.. | 3.80c |
| New Orleans | 3.70c |
| New York..... | 3.42c |
| Portland ..... | 3.75c |
| Philadelphia* | 3.20c |
| Pittsburgh(h) | 3.10c |
| San Francisco | 3.75c |
| Seattle ..... | 3.75c |
| St. Louis ..... | 3.44c |
| St. Paul ..... | 3.45c |
| Tulsa ..... | 3.70c |

| NO. 24 BLACK | |
|---|---|
| Baltimore*†.. | 3.76c |
| Boston (g).... | 4.15c |
| Buffalo ..... | 3.25c |
| Chattanooga.. | 4.41c |
| Chicago ..... | 4.10c |
| Cincinnati .... | 4.25c |
| Cleveland ..... | 4.16c |
| Detroit ..... | 4.185c |
| Los Angeles.. | 4.35c |
| New York..... | 4.05c |
| Philadelphia*† | 3.80c |
| Pittsburgh**.. | 3.80c |
| Portland ..... | 4.40c |
| San Francisco | 4.40c |
| Seattle ..... | 4.40c |
| St. Louis..... | 3.94c |
| St. Paul..... | 3.695c |
| Tulsa ..... | 4.75c |

| NO. 24 GAL. SHEETS | |
|---|---|
| Baltimore*†.. | 4.36c |
| Buffalo ..... | 4.00c |
| Boston (g).... | 4.75c |
| Chattanooga.. | 5.01c |
| Chicago (h).. | 4.70c |
| Cincinnati .... | 4.85c |
| Cleveland ..... | 4.76c |
| Detroit ..... | 4.85c |
| Houston ..... | 4.40c |
| Los Angeles.. | 5.05c |
| New Orleans | 4.95c |
| New York..... | 4.25c |
| Pitts.** (h) | 4.30-4.60c |
| Portland ..... | 5.00c |
| San Francisco | 5.00c |
| Seattle ..... | 5.00c |
| St. Louis..... | 4.54c |
| St. Paul..... | 4.19c |
| Tulsa ..... | 5.10c |
| Philadelphia*† | 4.40c |

| BANDS | |
|---|---|
| Baltimore*.... | 3.30c |
| Boston†† ..... | 3.40c |
| Buffalo ..... | 3.30c |
| Chattanooga.. | 3.76c |
| Chicago ..... | 3.45c |
| Cincinnati .... | 3.60c |
| Cleveland ..... | 3.51c |
| Detroit, ⅜-in. and lighter | 3.53½c |
| Houston ..... | 3.25c |
| Los Angeles.. | 3.90c |
| New Orleans | 3.95c |
| New York(d) | 3.77c |
| Philadelphia.. | 3.30c |
| Pittsburgh(h) | 3.85c |
| Portland ..... | 3.90c |
| San Francisco | 4.05c |
| Seattle ..... | 3.90c |
| St. Paul..... | 3.20c |
| Tulsa ..... | 3.45c |
| St. Louis ..... | 3.69c |

| HOOPS | |
|---|---|
| Baltimore..... | 2.80c |
| Boston ..... | 4.40c |
| Buffalo ..... | 3.55c |
| Chicago ..... | 3.45c |
| Cincinnati .... | 3.60c |
| Det., No. 14 and lighter | 3.53½c |
| New York..... | 3.77c |
| Philadelphia.. | 3.55c |
| Pittsburgh(h) | 3.85c |
| Seattle ..... | 5.60c |
| St. Paul..... | 3.75c |

| COLD FIN. STEEL | |
|---|---|
| Baltimore (c) | 3.71c |
| Boston .....4.00c-4.50c | |
| Buffalo (h).... | 3.55c |
| Chattanooga* | 4.06c |
| Chicago (h).. | 3.50c |
| Cincinnati .... | 3.70c |
| Cleveland (h) | 3.50c |
| Detroit ..... | 3.63½c |
| Los Ang.(f)(d) | 5.95c |
| New Orleans | 4.30c |
| New York...3.92c-4.42c | |
| Philadelphia.. | 3.73c |
| Pittsburgh(h) | 3.45c |
| Portland (f).. | 4.75c |
| San Fran.(f)(d) | 5.95c |
| Seattle (f)(d) | 4.75c |
| St. Paul..... | 3.20c |
| St. Louis..... | 3.74c |
| Tulsa ..... | 4.65c |

| COLD ROLL. STRIP | |
|---|---|
| Boston, 0.100-in., 500 lb. lots ..... | 5.35c |
| Buffalo ..... | 5.25c |
| Chicago (b).. | 3.45c |
| Cincinnati .... | 5.80c |
| Cleveland (b) | 3.20c |
| Detroit ..... | 3.33c |
| Philadelphia.. | 4.00c |
| New York..... | 4.70c |
| St. Louis..... | 5.74c |

(b) Plus straightening, cutting and quantity differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

# Current Iron and Steel Prices of Europe

**Dollars at Rates of Exchange, June 14**

## Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

| | British gross tons U. K. ports £ s d | Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d | £ s d |
|---|---|---|---|
| **PIG IRON** | | | |
| Foundry, 2.50-3.00 Silicon. | $15.15 3 0 0 | $8.03 | 1 13 0 |
| Basic bessemer..... | 13.64 2 14 0* | 7.30 | 1 10 0 |
| Hematite, Phos. .03-.05.... | 15.53 3 1 6 | .... | ..... |
| **SEMIFINISHED STEEL** | | | |
| Billets..... | $27.78 5 10 0 | $11.44 | 2 7 0 |
| Wire rods, No. 5 gage..... | 39.39 7 16 0 | 21.90 | 4 10 0 |
| **FINISHED STEEL** | | | |
| Standard rails..... | $39.14 7 15 0 | $26.77 | 5 10 0 |
| Merchant bars..... | 1.69c 7 10 0 | .69c to .72c | 3 2 6 to 3 5 0 |
| Structural shapes..... | 1.66c 7 7 6 | .63c to .66c | 2 17 6 to 3 0 0 |
| Plates, †¼ in. or 5 mm..... | 1.80c 8 0 0 | .91c | 4 2 6 |
| Sheets, black, 24 gage or 0.5 mm..... | 2.08c 9 5 0 | 1.21c to 1.24c | 5 10 0 to 5 12 6 |
| Sheets, gal., 24 gage, corr... | 2.53c 11 5 0 | 1.43c | 6 10 0 |
| Bands and strips..... | 1.86c 8 5 0 | .88c | 4 0 0 |
| Plain wire, base..... | 2.19c 9 15 0 | 1.18c | 5 7 6 |
| Galvanized wire, base..... | 2.59c 11 10 0 | 1.38c to 1.40c | 6 5 6 to 6 7 6 |
| Wire nails, base..... | 2.70c 12 0 0 | 1.27c | 5 15 0 |
| Tin plate, box 108 lbs..... | $ 4.36 0 17 3 | .... | ..... |

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4($3.74) f.o.b.

## Domestic Prices at Works or Furnace—Last Reported

| | £ s d | French Francs | | Belgian Francs | | Reich Marks |
|---|---|---|---|---|---|---|
| Fdy. pig iron, Si. 2.5..... | $17.04 3 7 6(a) | $12.56 | 190 | $14.51 | 310 | $24.00 63 |
| Basic bessemer pig iron.... | 16.41 3 5 0(a)* | 12.23 | 185 | 13.57 | 290 | 26.48 (b)69.50 |
| Furnace coke..... | 4.42 0 17 6 | 7.93 | 120 | 5.15 | 110 | 7.33 19.25 |
| Billets..... | 27.78 5 10 0 | 28.42 | 430 | 20.59 | 440 | 36.77 96.50 |
| Standard rails..... | 1.86c 8 5 0 | 2.10c | 700 | 2.31c | 1,100 | 2.28c 132 |
| Merchant bars..... | 1.94c 8 12 0 | 1.68c | 560 | 1.16c | 550 | 1.90c 110 |
| Structural shapes..... | 1.97c 8 15 0 | 1.65c | 550 | 1.16c | 550 | 1.86c 107.50 |
| Plates,†¼-in. or 5 mm..... | 1.91c 8 10 0 | 2.10c | 700 | 1.47c | 700 | 2.20c 127 |
| Sheets, black..... | 2.36c 10 10 0§ | 2.55c | 850‡ | 1.63c | 775‡ | 2.49c 144‡ |
| Sheets, galv., corr., 24 ga. or 0.5 mm..... | 2.93c 13 0 0 | 4.50c | 1,500 | 3.15c | 1,500 | 6.40c 370 |
| Plain wire..... | 2.19c 9 15 0 | 3.39c | 1,130 | 2.31c | 1,100 | 2.99c 173 |
| Bands and strips..... | 2.36c 10 10 0 | 1.95c | 650 | 1.47c | 700 | 2.20c 127 |

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

# Bars

Bar Prices, Page 66

**Pittsburgh**—Even though contract specifications for merchant steel bars, both carbon and alloy grades, are declining, producers have sufficient backlogs to necessitate refusal of spot orders for delivery over the remainder of June. Since all merchant steel bar producers have filed at 1.90c base, Pittsburgh, under the extended steel code as of June 11, the carbon bar market has since been quoted uniformly on that basis. Under the same circumstances, the alloy bar market is 2.55c, Pittsburgh.

**Cleveland**—Further contracting for steel bars is held in abeyance until consumers can more clearly determine their requirements. Two factors make it difficult for producers to book forward business now, first, the stocks users are building up; second, the absence of indications of any additional advance soon. General labor uncertainties also are making for a slow market. Attention now is centered on shipments, with practically all specifications in for June. Releases during the week were negligible. Mills are in position to take additional orders for shipment this month. A nearby automobile accessories manufacturer released 3000 tons of bars in the week.

**Chicago**—Shipments of iron and steel bars continue heavy with specifications reduced because mills are unable to accept additional business in certain grades and sizes for delivery before July 1. Consumption in several important industries is tending downward, including the automotive and farm implement fields. While third quarter books are open at unchanged prices for steel bars, new business is light. Bar iron has been advanced $2 a ton at Terre Haute, Ind., to 1.85c, with the new Chicago base on this commodity 1.90c.

**Boston**—While little business for next quarter on commercial steel bars is noted, shipments against contracts are heavier. Alloy and forging steel bars are also being taken out in better volume.

**New York**—Most larger consumers of bars have specified as fully as they intend to against contracts now expiring, it is believed. As a result volume of releases the past few days has tapered. There are no indications of excessive over-stocking, although sellers see little activity ahead.

**Philadelphia**—Steel bar specifications are spotty, with the likelihood most consumers will find mills in position to take tonnage against current quarterly contracts up until about the end of the month. No interest is being shown in contracts for next quarter. The market is 1.90c, Pittsburgh, or 2.19c, Philadelphia.

## Cold Finished

Cold Finished Prices, Page 67

**Pittsburgh** — The market is steady and unchanged at 2.10c base, Pittsburgh, for cold-finished carbon steel bars on deliveries in June and for third quarter. The cold-drawn alloy bar base is quoted at 3.05c, Pittsburgh. Specifications and shipments for both these classifications have been downward in June. Some slight third quarter buying has been reported in cold-finished bars from the automotive trade but tonnage is not heavy.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the Story of
SPECIALIZED PRODUCTION
COLD ROLLED STRIP STEEL

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THE THOMAS STEEL CO. • WARREN, OHIO

# Plates

Plate Prices, Page 66

**Chicago**—Since a large portion of plate orders are for specific jobs and do not necessitate delivery before the end of the quarter, there is less urgency in plate shipments than in some other products. Demand is fairly steady with a large tonnage yet to be placed for western dam projects. Railroad requirements continue substantially heavier than a year ago, but new equipment business is lacking. Plates continue 1.90c, Chicago.

**Cleveland** — Current demand for plates is composed of small, miscellaneous lots and mills will accept specifications for delivery on second quarter contracts up to the close of the month. Though this market recently has been one of the quietest of all finished steel products, steelmakers expect fabricated work requiring plates and shapes, on which protections have been issued, to form one of the mainstays of steel production in July when a sharp decline is anticipated in lighter finished products. Some substantial plate tonnages are pending for government work in western states. A nearby shovel manufacturer booked an order in the week requiring 300 tons of plates and shapes. Railroads have not yet placed their third quarter contracts.

**Pittsburgh** — Inquiry for river barges last week picked up considerably with requests for bids out on an aggregate of 20 barges that will total some 4000 tons of plates and shapes. Inquiries call for two 6-unit lots, two 3-unit inquiries and several inquiries for single barges.

**Boston**—Eastern mill sales representatives still are taking orders for shipment before the end of the quarter. Plate buying against contracts has been active. Tank work is fair, one New England brewery having ordered its third group of tanks. Several standpipes have also been bid. In a few instances plate users bought moderately for stock before the 1.95c, Coatesville, Pa., price becomes effective.

**New York**—Releases of steel plates against expiring quarterly contracts is well sustained and a good volume of new tonnage has been placed against identified projects, protections on which expired the middle of June. Standard Oil Co. of New Jersey is placing approximately 750 tons of fabricated plate work, a portion of which went to Chicago Bridge & Iron Works, Chicago, for a refinery on the island of Aruba, off the coast of Venezuela. The Standard Oil Co. of New Jersey has placed $1,000,000 worth of equipment for this project with Foster Wheeler Corp., New York. In spite of lessened incentive for consumers to contract ahead, due to probable steel code revisions plate producers report closing of fair volume of contracts.

**Philadelphia**—Plate production is the best in a year, substantial specifications still coming out. Possibly the largest releases of the past week were those of the Pennsylvania for car repairs and general maintenance work. In some quarters, it is estimated more than 4000 tons came out from this source alone, with specifications going to several mills. The Pennsylvania also opened bids June 15 on plates and a variety of other products, but has made no distribution. Inquiries for 24 navy vessels recently authorized, are expected out

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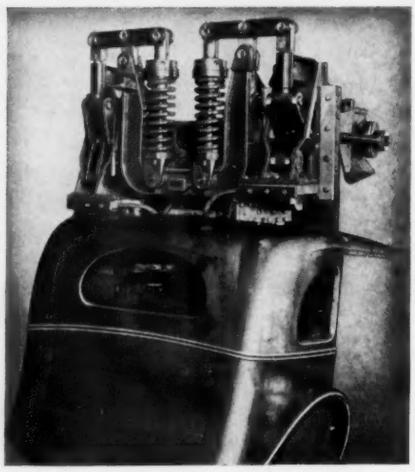

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Approximate dimensions.....

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6070

late in July or in August. Prices are unchanged at 1.95c, Coatesville, Pa., or 2.03 1/2c, Philadelphia. In view of the recent code revisions, contracting for next quarter is expected to be particularly light, with most consumers buying on a hand-to-mouth basis.

## Contracts Placed

1650 tons, 20 and 36-inch welded steel pipe, east bay municipal utility district, Oakland, Calif., to Steel Tank & Pipe Co., Berkeley, Calif.

550 tons, elevated tank, Thomasville, N. C., to Chicago Bridge & Iron Works, Chicago, previously reported as requiring 300 tons.

250 tons, 44 buoys, mainly of large type, department of commerce, lighthouse service, Staten Island, N. Y.; divided among following fabricators: Union Boiler & Mfg. Co., Lebanon, Pa., $18,895; Bartlett Hayward Co., Baltimore, $10,731; Downingtown Iron Works, Downingtown, Pa., $7860; R. D. Cole Mfg. Co., Newnan, Ga., $4600.

139 tons, Norfolk navy yard, requisition 735, to Hall-Hodges Inc., Norfolk, Va.

## Contracts Pending

12,000 tons, San Francisco bay pipe line crossing, Hetch Hetchy project, San Francisco; bids opened.

4000 tons, estimated tonnage at Pittsburgh, for new inquiries on approximately 20 Ohio river barges, both of standard and special construction, inquiries having appeared last week for several unstated buyers.

640 tons, 44 pontoons for Vicksburg, Miss., engineers each 48 x 18 x 2 feet 10 inches, bids of June 12; McClintic-Marshall Corp., Bethlehem, Pa., low at $80,740, followed by Ingalls Iron Works Co., Birmingham, Ala., at $82,500; Midland Barge Co., Midland, Pa., at $88,700; Dravo Contracting Co., Neville Island, Pa., $92,740; and St. Louis Structural Steel Co. at $93,984. One bid, that of St. Louis Structural Steel Co. at $86,330, was submitted on a welded basis.

500 tons, one mile of 32-inch welded pipe of 5/8-inch plate across Anacostia river at Washington.

325 tons, 1,000,000-gallon water tank, Sharon, Mass.; bids in.

302 tons, pontoon pipe United States Engineer, Vicksburg, Miss., bids asked.

175 tons, M street bridge over Sacramento river, Sacramento, Calif.; bids June 27.

135 tons, 250,000-gallon elevated tank, Gallatin, Tenn., Chattanooga Boiler & Tank Co., Chattanooga, Tenn, low.

115 tons, bureau of supplies and accounts, navy, Washington, for delivery to Norfolk and Puget Sound yards; bids June 22, schedule 2687.

107 tons, bureau of supplies and accounts, navy, Washington, schedule 2687, bids June 22.

## Bolts, Nuts, Rivets

**Bolt, Nut, Rivet Prices, Page 67**

Pending code ratification, producers of bolts, nuts and rivets at Pittsburgh indicated last week they would delay opening of third quarter books and announcement of prices until June 20 or later. In the meantime, 70 off list holds for bolts and nuts and base of 3.00c, Pittsburgh or Cleveland, and 3.10c, Chicago, for large rivets. Small rivets are quoted 70 and 5 off list and wrought washers 6.00 off.

Specifications and shipments at Chicago recently have been lighter, but increased demand is looked for shortly in closing contracts. Jobbers have been deferring specifications.

Orders and shipments so far this month at Cleveland are lighter than in May and the month's business apparently will not be as large as last month. Manufacturers there expect no change in nut and bolt prices for third quarter. Current rivet prices will apply for third quarter.

The sewage commissioin at Rochester, N. Y., has awarded 150 tons of bolts to a producer in the Pittsburgh district.

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# Sheets

Sheet Prices, Page 66

**Pittsburgh**—Late last week most sheet producers declared themselves out of the market on all spot sheet tonnage. With the processing necessary on the full-finished grades it will take another two weeks to have such sheets ready for shipment by June 30. The present 70 per cent rate of operations in the country's sheet mills probably will hold for at least this week but hot-mill operations will begin to decline within the next ten days. Practically no sheet buying has been reported for the third quarter except in specialties.

**Cleveland**—June shipments apparently will be the heaviest of any month in the first half of the year, as specifications now in hand in most instances are sufficient to sustain mill operations at present levels right up to the close of the month. Releases from automobile manufacturers and other large consumers have been much better than expected. One or two producers say their production will begin to taper off before the end of June unless more orders are received for third quarter. So far there have been only a few carload sales for July delivery, and little contracting for the full quarter. Though shipments indicate many consumers are endeavoring to anticipate their forward requirements, considerable more buying will have to be done for July.

**Chicago**—Some new sheet business for July delivery is being received, but forward buying is restricted by heavy shipments now being made against old contracts. This tonnage in some instances will accommodate users for a portion of third quarter. New business in material to be delivered this month is lacking since mill's books are filled and only in occasional instances can additional tonnages be accepted.

**Boston**—Shipments into New England are heavier. Buying for third quarter also has increased.

**New York**—Most sellers are out of the market for tonnage for shipment this quarter. Meanwhile, mills are being rushed to make shipments, consumers generally having specified substantially against current contracts.

**Philadelphia**—Sheet sellers generally appear satisfied with the volume of releases which came out against contracts this quarter. In certain instances, consumers took out more than permitted by their contracts, paying the prevailing higher prices. Sellers look for a dull market in July.

**Buffalo**—Buffalo district sheet mills are operating at 90 per cent. New business is beginning to taper off.

**Cincinnati**—Production continues high in the effort to ship all material on second quarter contracts. Third quarter bookings are light.

**St. Louis**—The leading sheet producer in this district has extended prices for third quarter. This interest is booked up for June, and is unable to take any additional sheet business. The movement of galvanized material to rural areas continues in considerable volume.


ATLAS GAS-ELECTRIC LOCOMOTIVES

*45 Ton Locomotive especially suitable for economical interplant switching service.*

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Gas-Electric and Diesel-Electric Locomotives . . . Electric Transfer Cars for Blast Furnaces and Steel Plants . . . Stockhouse Scale Cars for Blast Furnaces . . . Concentrate and Calcine Cars for Copper Refineries . . . Automatic and Remote Controlled Electric Cars . . . Pushers, Levellers and Door Extractors . . . Coal Charging Lorries, Coke Guides and Clay Carriers . . . Atlas Patented Coke Quenching Cars for By-Product Coke Ovens . . . Atlas Patented Indicating and Recording Scales . . . Special Cars and Electrically Operated Cars for every conceivable Purpose.

THE ATLAS CAR & MFG. CO.

*Engineers . . . Manufacturers*

CLEVELAND, OHIO


## Quicksilver

**New York**—Quicksilver is quotably unchanged at $75.50, a virgin flask of 76 pounds in small lots, and $74.50 a flask in round lots.

# Railroads

**Track Material Prices, Page 67**

Adoption of streamlined trains is increasing and the past week has seen the placing of one and approval of a PWA loan for a second, in addition to those already under construction. Boston & Maine has placed a three-car streamlined stainless steel articulated train with Edward G. Budd Mfg. Co., Philadelphia, power plant to be furnished by the Winton Engine Co., Cleveland. Illinois Central will receive a PWA loan for $2,000,000, of which $500,000 will be used for a streamlined train and the remainder for 11 diesel locomotives.

Seaboard Air Line is reported to have awarded 1000 double-sheathed box cars to the Pullman Car & Mfg. Corp., Chicago. Little freight car inquiry is now pending.

Lehigh Valley will open bids June 20 for its quarterly requirements of plates, shapes and bars. Other roads are expected to make similar inquiry soon.

Suppliers at Chicago are receiving fair orders for track accessories, 4000 to 5000 tons having been booked there in the past few days. Rail production continues moderate with deliveries probably completed by August 31, mills at Chicago being engaged about 30 per cent.

## Car Orders Placed

Boston & Maine, three-car streamlined stainless steel articulated train, to Edward G. Budd Mfg. Co., Philadelphia; power plant to Winton Engine Co., Cleveland.

Seaboard Air Line, 1000 double-sheathed box cars, reported awarded to Pullman Car & Mfg. Corp., Chicago.

## Car Orders Pending

Illinois Central, streamlined train, costing $500,000; PWA loan approved.

## Locomotives Pending

Illinois Central, 11 diesel locomotives; PWA loan of $1,500,000 approved.

## Rail Orders Pending

Panama Canal office, Washington, 1450 tons, rails and 3400 pairs splice bars; bids postponed to June 27.

## Coke By-Products

**Coke By-Product Prices, Page 67**

**New York** — Distillates are firm and active. Distributors of toluol are not taking spot business in some instances. Output has dropped. Naphthalene is moving steadily against contracts. Phenol and sulphate of ammonia are unchanged in price, and are inclined to lag in demand.

## Refractories

**Refractories Prices, Page 68**

**Pittsburgh**—Fire clay and silica brick specifications are fairly steady and continue the upward trend of the past four months. Prices are unchanged. Third quarter contracts may not be quoted until after June 16 and it is likely some revision in prices may be made then. Among projects pending are repairs to both No. 2 Eliza furnace and stove checker work for Jones & Laughlin Steel Corp., and checker work repairs to at least ten stoves at the Carrie furnaces of Carnegie Steel Co.

ALAN WOOD STEEL CO. ESTABLISHED "A.W." TRADE MARK 1826 CONSHOHOCKEN, PA.

**CARBON *and* ALLOY STEELS**

BLUE ANNEALED SHEETS
SHEARED PLATES—BILLETS

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*Rolled Steel*
**FLOOR PLATES**
*Diamond, Diamondette and Ribbed Patterns . . .*

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# Shapes

**Structural Shape Prices, Page 66**

**Pittsburgh**—A contract for 2500 to 3000 tons of shapes has been awarded by the Youngstown Sheet & Tube Co. to Fort Pitt Bridge Works, Pittsburgh, for a new strip mill building at Struthers, O. The exact tonnage was indefinite because several existing mill facilities may be utilized. Semet-Solvay Co. New York definitely decided last week to allocate 4000 tons for a building at Baton Rouge, La. Although prices have been submitted, no award has as yet been made. Awards and inquiries are more diversified. Plain structural shapes hold at 1.85c for the remainder of June and the third quarter, with wide flange material taking the usual $2 a ton extra and steel sheet piling 2.10c, Pittsburgh. About 50,000 tons of steel piling still is pending for two western government dams, including 30,000 to 35,000 tons, depending on contractors' design of cofferdams, for the Grand Coulee dam in Washington, bids to be taken June 18 by federal engineers at Spokane, Wash., and 15,000 to 17,000 tons for the Fort Peck, Mont., dam, bids to federal engineers at Kansas City, Mo., July 9.

**Cleveland**—Award of 750 tons of shapes for an Erie railroad bridge at Buffalo, and 450 tons for an Erie railroad bridge at Callicoon, N. Y., features the structural market. Approximately 3000 tons in various projects on which fabricators submitted bids recently still are pending. The market for small tonnages for industrial buildings is more active.

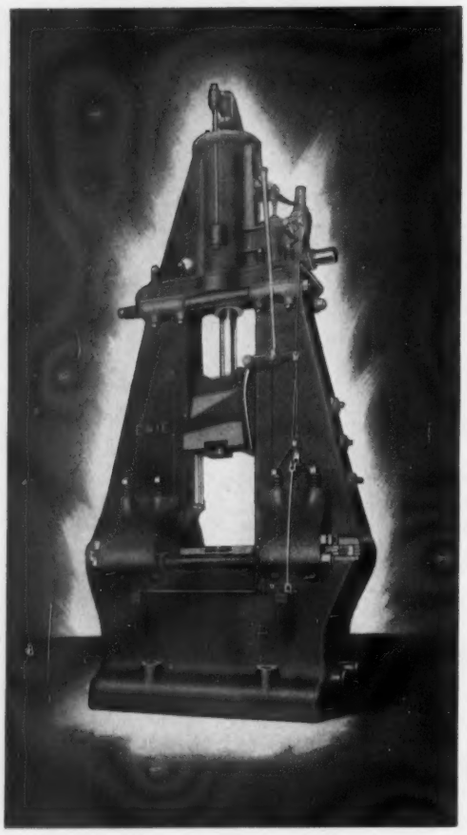
**Chicago**—Illinois closes bids June 19 and 26 on highway bridges involving 4765 tons. Other inquiries consist principally of state bridge work with no large projects for private interests materializing. Recent awards include 1400 tons for a pavilion in the Chicago stock yards and 1100 tons for a coal washer at Duquoin, Ill. Structural shops are not affected directly by labor troubles although operations would be impaired on the shutting down of shape mills.

**Boston**—Structural steel awards are light, but include a 300-ton screening plant project at Everett, Mass. A fair volume of business is being figured or is gradually coming out.

**New York**—Structural steel buying continues light. For a New York Central railroad bridge at West Albany, N. Y., close to 800 tons will be required.

Bookings of fabricated structural steel during May were under the records of the past seven months, but approximately 30 per cent larger than for this month last year. This is estimated upon preliminary reports received from 65 per cent of the industry. May shipments were approximately 23 per cent larger


**Where is the Neck of the Bottle?**



There is a new bottle neck in your production. Perhaps you haven't noticed it yet, but you will feel it pinch just as inevitably as you will see your business improve.

Neither you nor any other shop has made any new hammermen the last few years. There has been the normal drift to other jobs as well as the abnormal shifting due to conditions. Some of your men are gas station attendants or are running milk routes, — and they won't come back. To top it all every man's hours of employment per week are limited.

Under such conditions you can't increase production by putting on another shift, or by doubling up crews on your hammers. The only solution is to get the most production out of every hour that is worked, and the only way to do this is to give your men the very best tools available, ERIE drop hammers and ERIE trimming presses.

Replace your obsolete equipment with these modern machines. They are the answer to increased production with limited man hours. They are faster; they'll give you more production per hour. They are trouble free; you'll have less down time and more productive hours per day.

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## Shape Awards Compared

| | Tons |
|---|---|
| Week ended June 16 | 16,311 |
| Week ended June 9 | 14,705 |
| Week ended June 2 | 9,436 |
| This week in 1933 | 17,230 |
| Weekly average for 1933 | 15,413 |
| Weekly average, 1934 | 16,903 |
| Weekly average, May | 19,866 |
| Total to date, 1933 | 372,207 |
| Total to date, 1934 | 422,575 |

than the shipments in May last year. The shipments were larger than the monthly average for the past seven months.

**Philadelphia**—A fairly good volume is going through fabricating shops here. A leading award involves 470 tons for factory extentions for the Du Pont interests at Purlin, N. J., Carney's Point, Pa., and Belle, W. Va. Five fabricators participated.

**Toronto, Ont.**—Dominion Bridge Co. Ltd., Montreal, has obtained a contract requiring 3500 tons of structural steel from the International Nickel Co. of Canada, in connection with the installation of four new converters at the company's Sudbury, Ont., plant.

## Shape Contracts Placed

3500 tons, for International Nickel Co. of Canada's construction work at Sudbury, Ont. to Dominion Bridge Co. Ltd., Montreal.

2500 to 3000 tons, tonnage indefinite owing to plan to utilize existing mill buildings, new strip mill, Struthers, O., for Youngstown Sheet & Tube Co., to Fort Pitt Bridge Works, Pittsburgh.

1400 tons, pavilion, Union Stock Yards Co., Chicago, to Hansell-Elcock Co., Chicago.

1100 tons, coal washer, Duquoin, Ill., to Koppers Co., Pittsburgh.

750 tons, bridge for Erie railroad at Buffalo, to McClintic-Marshall Corp., Bethlehem, Pa.

700 tons, bridges, near Newport, Ark., highway 67, to St. Louis Structural Steel Co., East St. Louis, Ill.; Parham Construction Co., East St. Louis, general contractor.

470 tons, in amounts varying from 36 to 180 tons, miscellaneous plant construction for E. I. duPont de Nemours Inc., to McClintic-Marshall Corp., Bethlehem, Pa.; Virginia Bridge & Iron Works, Roanoke, Va.; American Bridge Co., Pittsburgh; Bethlehem Fabricators Inc., Bethlehem, Pa.; and Belmont Iron Works, Philadelphia. Construction is for Carney's Point, Pa.; Purlin, N. J.; and Belle, W. Va.

450 tons, bridge for Erie railroad at Callicoon, N. Y., to American Bridge Co., Pittsburgh.

400 tons, strip steel mill building, Detroit, for Rotary Electric Steel Co. of Michigan, Detroit, to R. C. Mahon Co., Detroit.

430 tons, bridge, Worland county, Wyoming, to Minneapolis-Moline Power Implement Co., Minneapolis.

350 tons, bridge, Johnson, Washington county, Iowa, to Clinton Bridge Co., Clinton, Iowa.

315 tons, engineering building, University of Virginia, Charlottesville, Va., to Carolina Iron & Steel Co., Greensboro, N. C.

300 tons, screening plant, Everett, Mass., to New England Structural Steel Co., Everett, Mass.

270 tons, state highway bridge, Palestine, Tex., to Austin Bros. Bridge Co., Dallas, Tex.

250 tons, bridge, Hastings, Nebr., to American Bridge Co., Pittsburgh.

250 tons, bridge, Caldwell parish, La., to McClintic-Marshall Corp., Bethlehem, Pa.

225 tons, school, Turtle Creek, Pa., to Levinson Steel Co., Pittsburgh.

230 tons, bridges, St. Louis, to Stupp Bros. Bridge & Iron Co., St. Louis.

200 tons, bridge, Washington street, Newburyport, Mass., to Boston Bridge Works Inc., Boston; through George A. Fuller Co.

185 tons, bridge, Mills county Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

160 tons, library, University of Arkansas, Fayettesville, Ark., to Fort Smith Structural Steel Co., Fort Smith, Ark.

145 tons, school No. 14, Albany, N. Y., to McKinney & Son, Albany.

145 tons, for Romes Ferry, La., to Jones & Laughlin Steel Corp., Pittsburgh.

140 tons, Henry Clay high school, Lexington, Ky., to Bedford Foundry & Machine Co., Bedford, Ky.

140 tons, state highway bridge, Calcasieu Parish, La., to Virginia Bridge & Iron Co., Roanoke, Va.

135 tons, grandstand for race track, San Mateo, Calif., to Pacific Coast Steel Corp., San Francisco.

130 tons, bridge, Greene, Guthrie county, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

125 tons, state bridge, Snohomish county, Washington, to Pacific Car &

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CRAWLER CRANES
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SHOVELS
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BUCKETS
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Here's another user's story . . . indicative of the performance and satisfaction Industrial Brownhoist Cranes are giving their users.

The . . . . . Co., during their annual equipment overhaul, tested and inspected their Industrial Brownhoist. What did they find? "No repairs or parts needed" is their comment. Furthermore, they say—

"This piece of equipment has been continuously employed on our dock in unloading materials. Despite the fact that it has been exposed to salt marsh vapors and the ravages of weather, it is in splendid condition. We feel that this equipment was properly designed and constructed, and that its efficient operation has been due, in a large measure, to your practical suggestions in its operation and maintenance. We are well satisfied with our investment in this crane."

INDUSTRIAL BROWNHOIST CORPORATION
*General Offices:* Bay City, Michigan
District Offices: New York, Philadelphia, Chicago, Cleveland

INDUSTRIAL BROWNHOIST

Foundry Co., Seattle; T. D. MacNeill, Mount Vernon, Wash., general contractor.

110 tons, buildings for Producers' Milk Co., Cleveland, to Fort Pitt Bridge Works, Pittsburgh.

106 tons, shapes and bars, highway structures, Union county, Arkansas, to Arkansas Foundry Co., Little Rock, Ark.; D. F. Jones Construction Co., Little Rock, general contractor.

100 tons, Kress building, Seattle, and other projects, to Isaacson Iron Works, Seattle.

100 tons, West Arndt street bridge, Fond du Lac, Wis., to Vulcan Mfg. Co., Fond du Lac.

100 tons, substation for electrification work, unstated location between Baltimore and Philadelphia for Pennsylvania railroad, to Fort Pitt Bridge Works, Pittsburgh.

100 tons, approximately, factory building, Glassine Paper Co., Conshohocken, Pa., to Frank M. Weaver Co., Lansdale, Pa.

100 tons, two projects for the West Virginia Pulp & Paper Co., Luke, Md., and Covington, Va., to Frank M. Weaver Co., Lansdale, Pa.

100 tons or more, shapes and bars, mess hall, Virginia Military institute, Lexington, Va., to Carolina Steel & Iron Co., Greensbore, N. C.; bars to Truscon Steel Co., Youngstown, O.; Doyle & Russell, Richmond, general contractors.

100 tons, or more, shapes and bars, school, Chestertown, N. Y., to Smith & Caffrey, Syracuse, and Kalman Steel Corp., Bethlehem, Pa.; Pierce Construction Co., Syracuse, N. Y., general contractor.

## Shape Contracts Pending

30,000 to 35,000 tons, depending on design of cofferdam, Grand Coulee dam, Washington; bids to federal engineers, Spokane, Wash., June 18.

15,000 to 17,000 tons, government dam at Fort Peck, Mont.; bids to federal engineers, Kansas City, Mo., July 9.

4000 tons, plant building, Baton Rouge, La., for Semet-Solvay Co., New York; bids received, site decided upon and early award expected.

2665 tons, state bridges, Madison county, Peoria and Niles Center, Ill.; bids at Springfield, June 19.

2100 tons, two bridges, Cook county, Illinois; bids at Springfield, June 26.

1800 tons, state armory, Jersey City, N. J.

1000 tons, Rye Patch dam, Lovelock, Nev.; bids in July.

1000 tons, Alcova dam, North Platte river, Casper, Wyo.; bids in July.

900 tons, office building for Electric Auto-Lite Co., Toledo; bids being taken.

810 tons, Elmwood avenue bridge, Rochester, N. Y., for city.

800 tons, state bridge, Wellston, Mich.

725 tons, also 53 tons of machinery, Umpqua river bridge, Oregon; Teufel & Carlson, Seattle, low.

690 tons, state bridge over White river, Newport, Ark.

650 tons, state bridge, Rhodes, Iowa.

600 tons, easterly sewage disposal plant for Cleveland; bids being taken.

480 tons, viaduct, Union county, Arkansas, Fred Luttjohann, Topeka, Kan., general contractor.

400 to 600 tons, auditorium, San Jose, Calif.; bids June 25.

300 tons, state bridges, Colorado.

309 tons, also 43 tons of machinery, Siuslaw river bridge, Oregon; Mercer-Frazier Co., Eureka, Calif., probable award.

200 tons, remodeling of Masonic Temple, Columbus, O.

200 tons, railroad bridge, Monongahela, Pa., for Pittsburgh & West Virginia railroad, Pittsburgh.

200 tons, railroad bridge, Hawks Nest, W. Va., for Chesapeake & Ohio railroad, Cleveland.

191 tons, bridge to carry route 30, section 10, across tracks of Reading railroad, Pennington, Mercer county, New Jersey; bids July 2. Project also takes 67 tons of reinforcing bars.

170 tons, bridge, Lansing, Mich., for Grand Trunk railroad.

# Reinforcing

**Reinforcing Bar Prices, Page 67**

**Pittsburgh**—Award of an unstated tonnage of bars for the foundations for the new strip mill at Struthers, O., for Youngstown Sheet & Tube Co. is expected, the contract for this work having been segregated from the structural steel work, which latter was placed last week. With the expiration by late next week of 60-day price protections on specific reinforcing bar jobs, the market becomes uniformly quoted 2.05c, Pittsburgh, on cut lengths and 1.95c, Pittsburgh, for mill lengths of new billet steel bars.

**Cleveland**—The state highway commission, Columbus, O., is taking bids on bridge and road work requiring 300 tons of reinforcing steel, this being the largest of new public work up for figures. Industrial construction is more active, but reinforcing requirements are limited to small lots.

**Chicago**—Highway work is taking fairly large tonnages of reinforcing

## Concrete Awards Compared

| | Tons |
|---|---|
| Week ended June 16 | 5,078 |
| Week ended June 9 | 9,677 |
| Week ended June 2 | 2,150 |
| This week in 1933 | 3,215 |
| Weekly average for 1933 | 3,771 |
| Weekly average, 1934 | 4,981 |
| Weekly average, May | 4,633 |
| Total to date, 1933 | 74,338 |
| Total to date, 1934 | 124,521 |


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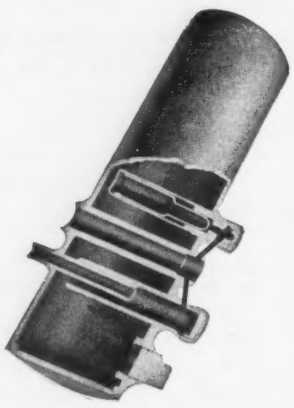

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bars, movement of this material having increased moderately during the past several weeks. A large program for road work in Illinois remains to be carried out and additional bids are scheduled to be asked later. Bids will be taken June 21 on sections 9 of the Chicago sanitary district requiring about 550 tons of bars, in addition to steel lining. Private construction here is quiet, outstanding projects on which awards have been made recently including a stock yards pavilion and construction for the Carbide & Carbon Chemical Corp. at Whiting, Ind.

**Boston**—Pending reinforcing steel requirements are heavy. Highways and bridges account for the bulk of requirements.

**New York** — Award of 1000 tons of reinforcing bars by New York city to a Brooklyn supplier, at $2 a ton, under what others quoted led last week to the filing of a protest at Washington on the ground that code provisions were violated. While a fair volume of reinforcing steel is up for early action, contractor-buyers are slow to close. Bids went in late last week on about 1200 tons of bars and mesh for highway work and bridges in New York state.

**Philadelphia**—Early distribution is expected of 400 tons of reinforcing bars for miscellaneous state work, on which bids were opened at Harrisburg last week. Demand generally is quiet, the largest award involving 200 tons for the Panama canal commission, placed with a Pittsburgh mill.

## Reinforcing Steel Awards

1000 tons, department of purchase, New York city, to Capital Steel Co., Brooklyn, N. Y.

650 tons, highway and by-pass, Concord and Lincoln, Mass., to Northern Steel Co., Boston; through B. Perrini & Sons.

450 tons, building for New Consolidated Chemical Co. Inc., North Woburn, Mass., to Joseph T. Ryerson & Son Inc., Boston; through the Austin Co., Cleveland.

410 tons, terminal, foot of Fourteenth street, Oakland, Calif., for port commission, to W. S. Wetenhall Co., San Francisco; Judson Mfg. Co., Oakland, Calif., to supply bars.

300 tons, plant for Carbide & Carbon Chemical Corp., Whiting, Ind., to Inland Steel Co.

300 tons, pavilion, Union Stock Yards Co., Chicago, to Calumet Steel Co., Chicago.

300 tons, bridge, Washington street, Newburyport, Mass., to Concrete Steel Co., New York; George A. Fuller Co., Boston, general contractor.

300 tons, bridges, near Newport, Ark., highway 67, to Laclede Steel Co., St. Louis, Mo.; Parham Construction Co., East St. Louis, Ill., general contractor.

250 tons, Kress store, 6608 Hollywood boulevard, Los Angeles, to unnamed interest.

200 tons, Panama Canal commission, Washington, to Jones & Laughlin Steel Corp., Pittsburgh.

185 tons, dormitories, state hospital, Pueblo, Colo., to Colorado Builders Supply Co., Denver, through W. Tramminga, Denver.

160 tons, grade separation work, Interboro Parkway - Vermont avenue, Queens, New York, to Concrete Steel Co., New York; through Cleverock Inc., New York.

153 tons, filtration plant, Gretna, La., to Woodward & Wight Co., New Orleans; R. P. Farnsworth & Co., New Orleans, general contractor. Jones & Laughlin Steel Corp., awarded small tonnage of structural steel.

120 tons, grade separation, Queens, N. Y., for Triboro bridge authority, to Capital Steel Co., Brooklyn, N. Y.; through Woodcrest Construction Co., New York.

100 tons, New York Central railroad bridge at Palmyra, N. Y., to Truscon Steel Co., Youngstown, O.

100 tons, state spans in Walla Walla and Skamania counties, Washington, to Northwest Steel Rolling Mills Inc., Seattle.

100 tons, approximately, state highway work, Santa Barbara county, California, to unnamed interest.

## Reinforcing Steel Pending

650 tons, Umpqua river state bridge, Oregon; Teufel & Carlson, Seattle, low.

550 tons, section 9, Chicago sanitary district; bids to sanitary district board June 21.

525 tons, Siuslaw river state bridge, Oregon; Mercer-Frazier Co., Eureka, California, probable award.

425 tons, enlargement of O'Shaughnessy dam, Hetch Hetchy project, San Francisco; bids soon.

300 tons, auditorium, San Jose, Calif.; bids June 25.

300 tons, state road and bridge work in Ohio; bids to state highway commission, Columbus, June 8, 22, 23 and 29.

275 tons, Fifteenth street sewer, San Francisco; Eaton & Smith, San Francisco, low for general contract.

187 tons, viaduct, Union county, Arkansas; Fred Luttjohann, Topeka, Kan., general contractor.

127 tons, M street bridge over Sacramento river, Sacramento, Calif.; bids June 27.

100 tons, state highway work in Los Angeles county, California; Basich Bros., Torrance, Calif., low for general contract.

## Tin Plate

**Tin Plate Prices, Page 66**

**Pittsburgh**—Tin plate mill operations rose 5 points last week to 75 per cent, mainly because tin mill operators scheduled heavier operations so as to have all available work-


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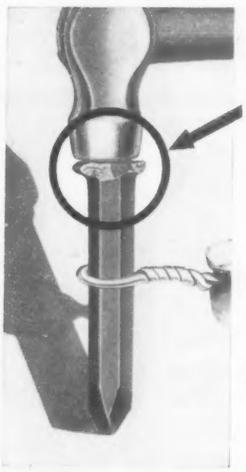

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ing forces on hand for employe representation voting during the week. An early decline from the 75 per cent rate is looked for, probably this week when the rate will ease to 65-70 per cent. Practically all canmakers for some months have been specifying in excess of their actual tin plate needs, and this fact coupled with the impaired crops in the Midwest will soon cause a decline in tin plate market activity. The 2.85c, Pittsburgh base, or 2.95c, Gary, Ind., base on tin mill black sheets has been reaffirmed for the third quarter, and contract tin plate at $5.25 per base box, Pittsburgh, is unchanged.

# Pipe

**Pipe Prices, Page 67**

**Pittsburgh** — Considerable speculative buying dominates the high rate of present activity in the market for tubular goods and because volume in the market is the highest for any time of this year it is believed that this is to the detriment of the coming months. Especially is this true in oil country goods where stocks are being accumulated and jobbers who formerly were buying on a footage basis are now placing orders for attractive tonnage items.

**Cleveland**—Mills have good backlogs for steel pipe for the remainder of this month, while the market for cast pipe remains dull. In the event a strike interrupts mill shipments on second quarter contracts for steel products it is believed an adjustment will be made, possibly to extend the delivery date to as soon after June 30 as it will be possible for the mills to produce the material.

**Chicago**—Cast iron pipe is more active as a result of additional releases against old orders sponsored by PWA funds, and indications point to an increase in shipments and business over coming months. Inquiries are light but a large tonnage is involved in pending work. Higher prices on cast iron pipe are looked for in the near future. Bids on additional pipe for the sanitary district program are expected to be asked for by early fall.

**Boston**—Lock Joint Pipe Co., Ampere, N. J., has been awarded 19,000 feet of 48-inch pipe for New Bedford, Mass. Bids have been rejected on a metropolitan district water line which requires 1400 tons. Cast iron pipe business is less active.

**New York**—Inquiry for small lots of cast pipe, generally less than 200 tons each, is slightly heavier, bulk of such requirements being for federal emergency relief work.

## Cast Pipe Placed

500 tons, 12-inch, Cedar Rapids, Iowa, to James B. Clow & Sons Co., Chicago.

239 tons, 14-inch, class 150, twelfth naval district, San Francisco, to United States Pipe & Foundry Co., Burlington, N. J.

200 tons, Long Island State parkway, New York, to United States Pipe & Foundry Co., Burlington, N. J.

175 tons, 6 to 10-inch, Marlboro, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

145 tons, 24 and 30-inch, class B, long Beach, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

Unstated tonnage, force main, Fond du Lac, Wis., to United States Pipe & Foundry Co., Burlington, N. J.

## Steel Pipe Placed

133,050 pounds, corrosion-resisting pipe and tubing, torpedo boat destroyers, navy department schedule 2173, Washington, to Steel & Tubes Inc., Cleveland.

## Cast Pipe Pending

9300 tons, 6 to 16-inch, class 150, San Francisco; bids opened.

400 tons, 8 and 12-inch, New York City; two openings, 200 tons each; United States Pipe & Foundry Co., Burlington, N. J., and Donaldson Iron Works, Emaus, Pa., low.

350 tons, also fittings, sewage disposal system, Pilgrim state hospital, Brentwood, N. Y.

280 tons, 2 to 14-inch, class 150, Carlin, Nev.; bids opened.

225 tons 16-inch, Sharon, Mass.; bids in.

128 to 333 tons, 6-inch, class B or 150, Whittier, Calif.; bids opened.

Unstated tonnage, 4 miles of 12-inch, also 250,000-gallon steel tank, water plant at Sylacauga, Ala.; bids July 9, Wiedman & Singleton, Candler building, Atlanta, Ga., engineers.

Unstated tonnage, 6000 feet of 7 and 6-inch, universal type joint, also valves, fittings and fireplugs, waterworks extension, Rowlesburg, W. Va.; Murphy Construction Co., Morgantown, W. Va., has general contract.

Unstated tonnage, 3500 feet, waterworks improvement, Farmersville, Tex.; bids July 6; Myers, Noyes & Forrest, Dallas, Tex., engineers.

# Strip Steel

**Strip Prices, Page 67**

**Pittsburgh**—Although some confusion existed late last week owing to failure of strip sellers to file prices, it appeared likely that 2.00c, Pittsburgh, base, on hot-rolled strip steel and 2.80c, Pittsburgh or Cleveland, base, on cold-rolled strip steel would be named for third quarter. Only a slight percentage of present strip shipments is being stocked against the price advance which contract holders will pay when the second quarter has expired.

**Cleveland** — Consumers generally have specified all the strip tonnage they will take this month in completing second quarter contract obligations, and new releases have declined sharply. Leading producers say they cannot accept any more orders for cold rolled strip for the re-

mainder of this month. Except for one or two contracts placed by automobile interests for third quarter, little contracting has been done for that period.

**Chicago**—Strip producers are well booked over the short period remaining in which deliveries may be made against contracts and are able to accept little new business. Specifications have been fairly heavy so far this month but only small lots have been entered for third quarter. Automotive consumption remains fairly heavy despite some curtailment during the past several weeks. The tendency in use among other industries also is moderately downward. Prices continue 2.10c, Chicago, for hot strip and 2.80c, Pittsburgh-Cleveland, for cold-rolled strip.

**Boston**—Strip mills in most cases are operating near capacity to meet demands for shipment before the end of the month. A lull in both cold and hot-rolled strip is expected during the first few weeks of third quarter when 3.00c, Worcester, Mass., is effective on all business.

**New York**—Lull in the strip market is pronounced, as releases against current contracts have been generally concluded. While the mills will continue to operate heavily until the end of month, barring labor trouble of unexpected proportions, the belief is here that tonnage will be well cleaned up by July 1.

**Philadelphia**—Quietness prevails in strip. Specifications for this quarter are in, for the most part, with mills able to take only a little tonnage in narrow widths, and to date there is no interest in next quarter. Prices are 2.00c, Pittsburgh, or 2.29c, Philadelphia, for hot strip and 2.80c, Pittsburgh, or 3.09c, Philadelphia, for cold strip.

## Wire

Wire Prices, Page 67

**Pittsburgh**—By last week buyers of wire products had practically all issued specifications for material which they expect shipped before July 1. The wire market is quoted 2.30c for plain wire, $2.60 per keg on nails, 2.45c on annealed fence wire and $60 per ton for woven wire fencing, all in carload lots on a Cleveland or Pittsburgh base.

**Chicago**—Wire shipments hold at about the rate of the preceding several weeks, while buyers have placed the larger portion of specifications for tonnage due against contracts. Consumption of manufacturers' wire is moderating in some industries but deliveries are steady. Drought damage to crops is affecting purchases of wire products as well as other materials. Third quarter contracting is quiet.

**Cleveland**—Producers here apparently will have no difficulty in accepting specifications through the remainder of this month, unless a strike intervenes. Demand is fairly well sustained, with June shipments the largest of any month this year.

**Boston**—Wire mill drawing operations are active except in a few departments. Shipments are heavy. Indications are that some industrial consumers of wire specialties have stocked moderately at second quarter prices.

**Philadelphia**—Except for certain descriptions, nails in particular, wire producers are unable to take further tonnage for shipment this quarter. As a result, sellers are experiencing a considerable letdown in activity.

## Semifinished

Semifinished Prices, Page 67

Led by sheet bar, skelp and wire rod shipments, demand for semifinished steel holds at a high level. Several large orders for skelp were placed at Pittsburgh last week. The market for billets, however, is quieter. Semifinished steel prices quoted for the remainder of this month, as well as the third quarter, name the following bases at Pittsburgh: $30 for sheet bars; $29 for billets; $34 for forging quality billets; $51 for alloy billets; skelp 1.70c per pound, and wire rods $38 per ton.

## Pig Iron

Pig Iron Prices, Page 68

**Pittsburgh**—Interest in pig iron among smaller foundries is more noticeable, with several buying carload lots of specialties recently. However, in the case of larger users, such as those taking basic, some slight decline is noticeable in shipments and several hold-ups have been reported. The Neville Island base on foundry iron at $18.50, basic at $18, and bessemer at $19 holds unchanged as does that on gray forge at $18.25 locally.


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However, third-quarter books have not been opened by producers of charcoal iron.

**Cleveland**—Shipments by furnace interests here this month are nearly twice as large in the comparable period in May, and producers believe this proportion will hold for the remainder of the month, as melters in practically all instances are taking tonnages due them on second quarter contracts. Automobile manufacturers are taking considerably more than any other class of consumers, and demand from railroads is active. Stocks acquired this month will cover requirements well into July, and little new contracting is expected until then. Currently, sales are restricted to occasional carloads.

**Chicago**—Moderate interest in third quarter pig iron needs is in evidence and a few small orders have been placed, but in view of heavy shipments against old contracts, consumers are expected to be light buyers the early part of the approaching quarter. Some concellations have been received but shipments of remaining tonnages are heavy and in addition to showing substantial gain over the May rate, are expected to top the volume of last December, the most active month of 1933. Steel foundries are operating at the best rate so far this year, receiving heavier orders for railroad equipment. Malleable plants as well as gray iron foundries, on the other hand, have reduced their schedules moderately.

**Boston**—Most consumers are taking good shipments against contracts covering the second quarter, but for the third, little buying has been done. Most larger melters have pig iron to carry well into the third quarter.

**New York** — Decline in specifications against current contracts is noted in the local pig iron market, although shipments are expected to continue at a good rate until the end of the month. New contracting is negligible, with sellers looking for little immediate improvement.

**Philadelphia**—While there is little business, pig iron producers are shipping the heaviest tonnage this year. Most are expecting a sharp decline next month, with the possibility that there will be little improvement before September. Prices are unchanged.

**Buffalo**—Furnaces here are making heavy shipments to complete deliveries this quarter on tonnage now under contract. June shipments promise to exceed those of May, which were the largest of the year to date, by 50 per cent if continued at present rates. Seven furnaces continue in production in the district, five in steelworks and two by merchants.

**Cincinnati** — Shipments made another gain the past week, much of this iron going into stock. With a few unimportant exceptions, all iron on second quarter contract will be taken out. New business is expanding slowly, consumers either having sufficient iron or preferring to await clarification of conditions affecting requirements.

**St. Louis**—Shipments continue on a large scale, with the aggregate for June assuredly well over the total for May. Stove plants are busy in anticipation of a general 10 per cent wage advance, effective June 18. A large carryover of iron into the third quarter is seen in consumers stocks, with new buying likely to be light until fall.

**Birmingham, Ala.**—No new business in pig iron is reported. Production continues undisturbed by the miners' strike. Surplus stock of basic and foundry grades is heavy and prompt deliveries are being made.

**Toronto, Ont.** — Demand for merchant iron is sustained, with sales confined to single-car lots. Bulk of buying is from the automotive industry and makers of mining machinery and supplies. Production holds at about 1000 tons daily.

# Scrap

**Scrap Prices, Page 69**

**Pittsburgh** — An apathetic market finds dealers out of orders on which to ship scrap, consuming mills not interested in buying material as long as strike possibilities exist, and consumers of scrap, of which the railroads were prominent last week, failing to attract spirited bidding. Therefore, in a sense the market has resisted any further decline and nominally No. 1 heavy melting steel here is quoted $11.50 to $12, hydraulic compressed sheets at $11 to $11.50 and machine shop turnings at $7.50 to $8. Most dealers view the present state of affairs as highly conducive to a rapid about-face in the market, saying that mills will buy as soon as the strike threat is lifted.

**Cleveland** — Melters and dealers show little interest in steel and iron scrap and buying is at a low point. Prices have not been changed and are nominal. Present prices offer little incentive to collectors and those with accumulations are holding them.

**Chicago** — While mills generally are deferring placing of large orders for scrap, pending a clarification of the operating outlook, a few thousand tons of heavy melting steel have been bought recently. These sales leave the market unchanged at $9.50 to $10.

**Boston**—Scrap prices are firmer. The Worcester consumer's delivered prices on steel works scrap are unchanged. While still light, buying has shown some spotty improvement. Heavy cast is off 50 cents.

**New York**—Scrap prices are steadier, but domestic demand shows only slight improvement, although some small shipments are going to eastern mills. New demand for export has slowed up, although buying for barge loading continues against contracts.

**Philadelphia**—While a mixed tone prevails, heavy melting steel is higher at $10.50, delivered, a price established by the purchase of a few thousand tons by the leading Claymont, Del., consumer. No. 2 melting steel is up 50 cents a ton to $9 to $9.50, due to rush demands from mills in meeting production schedules. Knuckles and couplers and steel wheels also have been advanced; heavy breakable cast and No. 1 forge have been reduced.

**Buffalo** — There is no basis on which to quote actual scrap prices in this district as no tonnage has been sold this month. The entire list is nominal but dealers look for some purchases around the end of the quarter, but consumers are awaiting a definite turn in the labor situation before permitting unrestricted shipments on large contracts outstanding.

**Detroit**—For the second successive week the scrap market here steadied, with no change in prices. June lists, now closed locally, all showed a diminishing volume trend from a month ago, partly contributing to the market's steadiness as unusually heavy offerings had forced the market down previously. Water shipments from this district, mainly to Lorain, O., Cleveland and Buffalo, continue heavy, it being estimated that upward of 50,000 tons has already moved this season.

**Cincinnati**—Conditions in the iron and steel scrap market are unchanged, dealers' prices being considered nominal but without further adjustment. Yard stocks are being held intact, at current bids, in belief mills will resume buying as soon as strike threats are removed.

**St. Louis**—Iron and steel scrap continues quiet. Melters apparently are well covered on immediate needs. An additional purchase of 2500 tons

of steel was made by the Sheffield Steel Co., bringing its recent acquisitions up to 4000 tons.

**Birmingham, Ala.**—Purchase of an obsolete blast furnace by a heavy melting steel consumer will affect the open market some. Another large consumer of the product some weeks since purchased rails from one of the southern railroads and is carrying a fairly good stock of old material. Quotations for scrap iron and steel are unchanged though not as firm as they have been. There is still some demand for No. 1 cast and a few other items.

**San Diego, Calif.** — A Japanese freighter recently loaded 8000 tons of scrap at Balboa, C. Z., purchased several months ago from the United States government through the Panama canal administration, for shipment to Japan.

**Toronto, Ont.** — Minor improvement featured business in the iron and steel scrap market for the week, with demand specialized. Consumers are taking iron grades and sales of wrought scrap have improved. Steel grades are dull with mills taking delivery on special grades for immediate needs. Prices are steady and unchanged.

## Warehouse

**Warehouse Prices, Page 70**

**Pittsburgh** — Although steel jobbers expect heavy demand for stocked products if the steel strike is of any duration, few jobbers considered the threat seriously enough here last week to lay in heavier inventories. So far in June, warehouse steel demand has been less than that of May. Prices are unchanged except on seamless boiler tubes where revisions follow the recent mill changes.

**Cleveland**—Further recession is noted here in warehouse tonnage volume. Labor uncertainties continue to exert a retarding influence on business. Sellers here shortly will adjust their pressure tube prices in line with recent revisions in mill prices.

**Chicago** — Sales are steady and compare favorably with the May volume. Boiler tubes have been advanced about 5 per cent, with new quantity differentials applied on mechanical tubing, resulting in some advances and some reductions in net prices.

**Boston** — Warehouse volume is running slightly ahead of last month, the increase also being noted by jobbers outside the immediate Boston district. Orders are small but fairly numerous and well spread as to products.

**New York**—Demand for steel out of warehouse has lessened the last week and June totals are running behind the previous month with most distributors.

**Philadelphia**—Jobbers continue to report a better rate of tonnage than in May, although a poorer rate than in April. Prices are steady.

**Detroit** — Prices on boiler tubes and seamless mechanical tubing out of warehouse here have been revised in accordance with recent mill prices. No other change in jobber prices has occurred. Smaller demand for hot-rolled and cold-drawn steel reflects seasonal conditions.

**Cincinnati**—There has been little buying the past few weeks as protection against strike effects. Volume has been maintained close to the May demand. Prices on boiler tubes have been upward and quotations adjusted to methods adopted by manufacturers.

**St. Louis**—Distributors of iron and steel report business so far this month only slightly below the comparable period in May, and well above a year ago. Demand for a variety of commodities for railroad shops is active.

## Ferroalloys

**Ferroalloy Prices, Page 68**

Ferromanganese sellers have reaffirmed the $85 duty paid price, Atlantic and Gulf ports, for third quarter. Specifications have been well maintained at the rate prevailing since the latter part of May. A rather sharp decline is expected to set in soon, however, as steel making operations will undergo a substantial drop at the end of this month. Under the revised steel code, which now includes ferromanganese, Baltimore is the nearest basing point for Pittsburgh, and with an all-rail freight rate of $4.79, the new price is $89.79, or 45 cents less than the former delivered price. Ferrophosphorus, 17 to 19 per cent, has been reduced $8 a ton to $42, and electrolytic ferrophosphorus $10 a ton to $55 for third quarter, contracts being for three months instead of six months under the code provisions. Domestic spiegeleisen, 19 to 21 per cent is $26, furnace, for spot, with books expected to be opened early this week for business beyond the end of this half.

Under the operation of the steel code, which now governs ferromanganese, the nearest base to Pittsburgh is Baltimore. With $85, base, quoted there, plus $4.79 all-rail freight rate, ferromanganese delivered in Pittsburgh is $89.79.

Washed gravel fluorspar continues quoted $17 per net ton in carload lots f.o.b., Illinois or Kentucky. Other ferroalloy prices are holding unchanged with the exception of 17 to 19 per cent ferrophosphorus reduced $8 a ton to $42 for third quarter contracts, and electrolytic ferrophosphorus reduced $10 a ton to $55.

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## Nonferrous Metals

**Nonferrous Metal Prices, Page 68, 69**

**New York**—A somewhat mixed situation was apparent in the nonferrous metals both as regards prices and demand. The steel strike was an unsettling influence.

**Copper**—Electrolytic metal was uniformly quoted 9.00c, Connecticut, Thursday by all blue eagle sellers. Two interests filed this price June 8 and all of the larger interests went to the same level June 12. More than 41,000 tons of copper were sold during the three market days, June 8, 9 and 11 in anticipation of the advance. Sellers quotas under the copper code now are well filled ahead. Copper products were advanced ½-cent and brass ¼-cent. The higher prices here have been accompanied by an easier market on metal for delivery abroad. Sales were made Friday at 8.00c, c.i.f. European ports.

**Lead**—Fair business was done in lead last week and some were of the opinion that the market was in a position for a price rise. Sellers continued to quote 3.85c, East St. Louis, and 4.00c, New York, however.

**Zinc**—Prime western metal declined $1 a ton as a reflection of an easy Tri-State ore market. While metal was freely available at the lower level of 4.20c, East St. Louis, although some sellers held to 4.25c.

**Tin**—Prices averaged well below the level of the previous week as prices tended downward abroad and sterling exchange weakened. Consumers placed few orders. Some professional activity was noted, however.

**Antimony**—Spot metal was available at 7.85c as the week closed after selling well above 8.00c recently. Little activity was noted.

**Aluminum**—Scrap was easier but remelt grades showed no further decline. Virgin metal was quieter.

## Metallurgical Coke

**Coke Prices, Page 67**

Connellsville coke prices remain unchanged at $3.85 for furnace grades, with 25 cents deduction for 12-month contracts. Foundry coke is $4.60, ovens, for common grades and $5.35 for premium. Little change in production rate is noted in the Pittsburgh and Connellsville districts.

At Chicago foundry coke shipments are off about 10 per cent from the May rate. The market remains $8.50, ovens, for outside delivery, and $9.25 for Chicago delivery. Cincinnati producers of by-product coke find shipments well sustained at unchanged prices. St. Louis users are taking shipments steadily on contracts and will have considerable tonnage to carry over into third quarter. Production at Birmingham, Ala., is above the rate of the past two years and the price is steady.

## Steel in Europe

**Foreign Steel Prices, Page 70**

**London**—(*By Cable*)—Production of iron and steel in Great Britain in May increased over April, both in total tonnage and average daily output. Pig iron output was 527,900 gross tons, compared with 496,300 tons in April, a gain of 31,600 tons, or 6.3 per cent. Daily average production rose from 16,543 tons in April to 17,029 tons in May. The number of active blast furnaces increased from 98 to 102.

Steel ingot output in May totaled 780,000 tons, compared with 716,800 tons in April, a gain of 63,200 tons, or 8.8 per cent. The daily average in May was 28,888 tons and in April 28,672 tons.

Withdrawal by the government of the time limit on import duties on steel products has encouraged steelmakers to go forward with reorganization plans.

The steel market is strong and export prospects are brighter. Improvement in shipbuilding on the Clyde is reflected in larger specifications for raw materials.

The Continent reports the recent slight improvement is being maintained; buyers in Egypt, Syria, Palestine and Scandinavia are displaying more interest.

## Pacific Coast

**Pacific Coast Prices, Page 67, 68, 70**

**San Francisco**—(*By Air Mail*)—The stevedore strike situation on the Pacific coast has not improved and consumers find it increasingly difficult to obtain raw material from eastern mills. In several instances bids have been rejected on projects involving structural shapes, due to uncertainty of delivery, and redesigned for reinforced concrete, as such material is manufactured on the coast.

Concrete bar awards aggregated less than 1000 tons. W. S. Wetenhall Co. booked 410 tons for a terminal in Oakland, Calif., for the port commission, and Judson Mfg. Co. will supply the material. Unnamed interests took 250 tons for a Kress store in Los Angeles. Bids will be called for soon for 425 tons for the enlargement of the O'Shaughnessy dam, Hetch Hetchy project, San Francisco. Effective June 11 the reinforcing bar price changes to 2.50c f.o.b. cars, Pacific ports.

Steel Tank & Pipe Co. secured 1650 tons of plates for 20 to 36-inch welded steel pipe for the east bay municipal utility district, Oakland, Calif. No other awards of importance were noted. Bids have just been opened on 12,000 tons for a pipe line across San Francisco bay for the Hetch Hetchy project.

While considerable structural work is pending, only one award was reported. Pacific Coast Steel Corp. took 135 tons for a race track grandstand at San Mateo, Calif. Bids open June 25 for 600 tons for an auditorium in San Jose, Calif. Bids will be opened in July for the Alcova dam, North Platte river, Casper, Wyo., involving 1000 tons and also on the Rye Patch dam at Lovelock, Nev., calling for a similar tonnage. Pending business aggregates more than 22,000 tons.

Only two cast iron pipe lettings were noted. United States Pipe & Foundry Co. booked 239 tons for the twelfth naval district, San Francisco, and 145 tons of 24 and 30-inch pipe for Long Beach, Calif. Bids have been opened on 9300 tons for San Francisco, on 280 tons for Carlin, Nev., and 128 to 333 tons for Whittier, Calif.

## More Bridge Bids In

**Seattle** — Opening of bids by the Oregon highway commission for the last two of the five coast bridges featured the Pacific Northwest iron and steel market this week. Teufel & Carlson, Seattle, were low for both spans, bidding $551,234 for the Umpqua river and $471,871.50 for the Siuslaw span. However, this firm's tender was conditioned on taking only one contract. It is understood they will get the Umpqua job, while the Siuslaw project will likely go to the second low bidder, Mercer-Frazier Co., Eureka, Calif., at $491,000. The Umpqua job involves 725 tons of shapes, 53 tons of machinery and 650 tons of reinforcing. Siuslaw calls for 309 tons of shapes, 43 tons of machinery and 525 tons of reinforcing.

While contracts have already been awarded for the first three bridges, Alsea, Coos Bay and Yaquina, work has not started as funds have not been made available. PWA has granted an additional 10 per cent to the original $5,103,000 loan. It is expected that now with all bids in there will be no further delay.

The week's awards in this territory

were of minor importance. Pacific Car & Foundry Co., Seattle, booked 125 tons of shapes for a state bridge in Snohomish county, Washington. Isaacson Iron Works, Seattle, took a small tonnage for the Kress building, Seattle, which with other coutracts makes a total of 100 tons. Northwest Steel Rolling Mills Inc., Seattle, is furnishing 100 tons of reinforcing for several jobs, including an undercrossing at Walla Walla, Wash., and a state bridge in Skamania county.

Steel Pipe & Tank Co., Portland, Oreg., is low at $4025 for furnishing Spokane a 300,000-gallon standard flat bottom steel tank for the Indian Creek water system. Aberdeen, Wash., has awarded to National Tank & Pipe Co. at $3198, the contract to furnish castings for the Wishkah water line. United States Submarine Motorship Dredge Co. Inc., Seattle, has purchased from the Diesel Equipment Co. complete power units for equipping 24 mining dredges in Alaska. The order includes 96 diesel engines from 36 to 75-horsepower each. The contract totals $205,000.

While Alaska shipping has been released, strike conditions continue to strangle all other water transportation in this area.

There is no improvement in the cast iron pipe market as municipalities cannot finance their needs. Oriental buyers of scrap are holding back until pending contracts are filled. This awaits resumption of water traffic.

## Meetings

(*Concluded from Page* 18)

A. Scott, 166 Tappan avenue, Belleville, N. J., is secretary-treasurer.

¶National Wholesale Hardware association has announced its fortieth annual convention at the Marlborough-Blenheim hotel, Atlantic City, N. J., Oct. 22-25, in conjunction with the American Hardware Manufacturers association. George A. Fernley, Philadelphia, is secretary-treasurer of the National association.

## They Say:

ANY step that would force the workers of the country into labor organizations of one kind, and force industry to deal with labor organizations of one kind—the national unions—would be the most dangerous and eventually the most regretted step in our nation's history. It is my sincere belief that the true solution to the problem of employe relationships is the representation plan, because its foundation is—and must be—peace in industry. From their inherent nature, national unions depend and must depend for their very existence upon dissension and strife.

"I am firmly convinced that we will make permanent progress only through allowing to the individual the greatest possible freedom of action. The workman ought to be free to join a labor union or not, as he sees fit. He ought to be free to work without the consent or approval of any labor leader and without submitting to dictation by labor organizations, with their burdensome regulations, fines and favoritism. The employer ought to be free to engage in competition so long as he does not use any unfair trade practices. If he is controlled by law in the wages he should pay and by codes in the price at which he sells his goods, there is practically no reward for foresight and ingenuity."—Ernest T. Weir, Chairman National Steel Corp.

¶"The 73rd session of congress is failing labor. Not one of labor's measures, such as the Wagner labor disputes bill, Connery 30-hour bill, Wagner-Lewis unemployment insurance bill, and LaFollette $10,000,000,000 appropriation for public works and relief has been enacted."—William Green, president, American Federation of Labor.

## Here and There In Industry

McCLINTIC - MARSHALL Corp., Bethlehem, Pa., on June 1 began booking all of its Pacific coast business in the name of the Pacific Coast Steel Corp., San Francisco. Both companies are subsidiaries of the Bethlehem Steel Corp.

E. F. Gohl, who has been Pacific coast manager of the McClintic-Marshall Corp., has been elected vice president in charge of the fabricating division of the Pacific Coast Steel Corp., with headquarters at Twentieth and Illinois streets, San Francisco.

□ □ □

Gardner-Denver Co., Quincy, Ill., has moved its office at Tulsa, Okla., to 309 Thompson building. F. H. Ryan is in charge.

□ □ □

W. C. Norris Co., Tulsa, Okla., manufacturer of oil field equipment, has opened a branch office and warehouse at Houston, Tex., in charge of Henry H. Paris.

□ □ □

Duraloy Co., South Twenty-sixth street, Pittsburgh, has appointed L. M. Utilities Co., Tulsa, Okla., its sales representative in Oklahoma and Kansas.

□ □ □

Streine Mill Equipment Co. has been formed by Frank H. Streine, president and general manager, and C. L. Streine, secretary and treasurer at New Bremen, O., and will deal in straight and rotary shear knives, shears, roll corrugated machines, corrugating and forming presses, roofing dies and similar equipment. Frank H. Streine for many years was general manager of the Streine Tool & Mfg. Co., New Bremen, O.

## Fauntleroy Again Heads Malleable Founders' Society

R. R. Fauntleroy, Moline Malleable Iron Co., St. Charles, Ill., was reelected president of the Malleable Founders' society at the annual meeting held in Cleveland, June 12. John C. Haswell, Dayton Malleable Iron Co., Dayton, O., was named vice president and Robert E. Belt, Cleveland, secretary and treasurer.

The meeting was devoted to the discussion of problems pertaining to the administration of the code of fair competition of the malleable iron industry. Charles R. Hook, president, American Rolling Mill Co., Middletown, O., spoke at the luncheon meeting on "Employe Representation Plans."

## To Show Grinders in England

The display of new types of grinding machines, held early in December (STEEL, Dec. 18, 1933) by the machine division of the Norton Co., in Worcester, Mass., under the direction of H. W. Dunbar, has been exported to England. Ten of the 19 models exhibited in this country have been shipped to Coventry, the display opening there June 18, at the plant of Alfred Herbert Ltd., Norton dealer.

## Chicago Foundrymen's Club Gets A. F. A. Charter

D. J. Reese, Whiting Corp., Harvey, Ill., was elected chairman of the Chicago section, American Foundrymen's association, at the first meeting of this body held recently at the Great Northern hotel. The Chicago section supersedes the Chicago Foundrymen's club which has been dissolved, but activities of the new organization will continue largely as heretofore.

The Chicago group is the first local body to receive a charter from the foundrymen's association. Other officers chosen include: Vice chairman, James Thomson, Continental Roll & Steel Foundry Co., East Chicago, Ind.; secretary, W. C. Packard, National Engineering Co., Chicago; treasurer, C. C. Kawin, C. C. Kawin Co., Chicago.

Members selected for the executive committee are: W. C. Cureton,

W. A. Jones Foundry & Machine Co.; G. L. Cherry, Western Electric Co.; L. G. Wise, Chicago Malleable Castings Co.; J. R. Allan, International Harvester Co.; D. E. Clifford, Hickman Williams & Co.; W. H. Parker, American Steel Foundries; J. J. Boland, Griffin Wheel Co.; and V. E. Flodin, Crane Co.

## New England Iron League Holds Annual Outing

New England Iron league members and guests returned June 12 following their annual fishing trip to Moosehead Lake, Me., where they "camped" at the Squaw Mountain Inn. The trip and return was made in two private cars.

Prize for the largest fish landed went to Samuel W. Fuller, New England manager, Jones & Laughlin Steel Corp., while daily prizes for the largest caught on each day went to J. G. Andrews, Boston Bridge Works, Cambridge, Mass.; W. D. Hill, Bath Iron Works, Bath, Me., and G. T. Armstrong, New England manager, Central Iron & Steel Co., Harrisburg, Pa. The committee in charge included G. T. Armstrong, chairman, J. G. Andrews and Chapin E. Harris, Brown-Wales Co., Boston. Attending the annual angling party were:

J. G. Andrews, Boston Bridge Works, Cambridge, Mass.; G. T. Armstrong, Central Iron & Steel Co., Boston; George R. Beason, Scully Steel Products Co., Boston; Malcolm Calder, New England Bolt Co., Everett, Mass.; P. K. Cranshaw, Clark Bolt Co., Milldale, Conn.; C. C. Dodge, George F. Blake & Son, Worcester; Samuel W. Fuller, Jones & Laughlin Steel Corp., Boston; Thomas Dransfield, Bethlehem Steel Co., Boston; D. J. Doyle, assistant registrar of Motor Vehicles, Boston; Henry A. Getty, Alan Wood Steel Co., Boston; Chapin E. Harris, Brown-Wales Co., Boston; W. D. Hill, Bath Iron Works, Bath, Me.; J. A. Henly, Lally Column Co., Cambridge, Mass.; Charles Heggie, Scully Steel Products Co., Chicago; C. D. Hubbard, C. H. Stebbins, and E. R. Sinclair, Bethlehem Shipbuilding Corp., Boston; H. C. Wills, Joseph T. Ryerson & Son, Inc., Boston; R. B. Wallace, Bethlehem Steel Co., Boston; O. L. Knapp, Revere Copper & Brass Co., Taunton, Mass.; L. A. Parker, Republic Steel Corp., Boston; J. A. Scheibel, Haarmann Steel Co., Holyoke, Mass.; H. B. Ressler, Joseph T. Ryerson & Son, Inc., New York; Ralph Rowles, Jones & Laughlin Steel Corp., Pittsburgh; Clinton C. McCarty, American Brass Co., Boston; E. W. Roamer, building commissioner of Boston.

The New England Iron League has been functioning as a social organization for well over a quarter of a century. It is composed of representatives of mills, fabricators and jobbers connected with the iron and steel industry.

# Equipment

**Chicago**—Most equipment markets are marking time, with buyers slow to close on pending items. Inquiries are maintained in better volume than are orders, the past few weeks having shown considerable hesitancy in the making of purchases. Bids are expected to be asked soon on machine tools for the Lane technical school here. This inquiry will involve more than 100 tools, principally lathes, the total to be determined by the number of machine shops to be equipped. Machine tool inquiries elsewhere are limited to small individual lots. Foundry equipment demand is quieter, following fairly good activity during May. Railroads and steel plants are in the market for miscellaneous equipment principally.

**New York**—Inquiry for machine tools has improved while some dealers have noted a slight gain in orders which, however, are generally for one or two tools at a time. The recent gain in demand for sheet metal working tools continues.

**Boston**—Demand for machinery is unchanged, builders having figured a fair volume of special tools. Orders are being closed slowly. A few shops in the district, however, are operating full time. The demand for textile mill equipment holds well. A New England steelworks is replacing the upper section of an open-hearth stack, specifying wrought iron plates.

**Pittsburgh** — Tentative schedules indicate that by April 1, 1935, Mesta Machine Co., Pittsburgh, will have completed work on the continuous wide strip mill which Youngstown Sheet & Tube Co. bought a week ago. The mill unit first was tentatively awarded to Mesta Machine Co. in 1930 but appropriations were delayed. The mill's capacity, approximately 500,000 tons yearly, will be in not only hot-rolled strip but plates, skelp and heavier gages of hot-rolled sheets. Its size range will be from 5/64-inch thick to 74 inches wide, in 16 gage to 60 inches wide, and in 18 gage up to 48 inches wide. Total cost is estimated at over $6,000,000. Contracts covering the electrical equipment, expected to aggregate more than $1,000,000, are currently expected to be divided between General Electric Co. and Westinghouse Electric & Mfg. Co., but a large number of small motors, as well as cranes and miscellaneous equipment, will be transferred from other divisions of Sheet & Tube.

# Construction and Enterprise

### New York

ALBANY, N. Y.—New York Diesel Institution Inc. has been formed by Henry M. Kramrath, 104 North Pearl street, Albany, N. Y., and associates, to establish a machine shop for diesel engine and general machine work.

ASTORIA, N. Y.—Raymond Bartholomew, 69-47 Astoria boulevard, plans a 2-story 25 x 150-foot coal pocket and platform at 111th street and the Long Island railroad tracks, to cost about $30,000.

BROCKPORT, N. Y.—Karge Refrigeration Inc. has been formed to manufacture refrigeration equipment and accessories by Maxwell R. Karge, Brockport, and associates.

BROOKLYN, N. Y.—Ebling Brewing Co., 937 Fulton street, will enlarge and improve its branch plant at Bridgeport, Conn., installing some new equipment. Cost is estimated at about $40,000.

BUFFALO—Department of public works, George J. Summers, commissioner, plans construction of a municipal electric light and power plant for lighting streets and public buildings, including transmission system, to cost about $50,000.

COVERT, N. Y.—New York State Electric & Gas Corp., Ithaca, N. Y., plans construction of an electric light plant and distributing lines, to cost about $25,000.

HUDSON, N. Y.—Board of education has had plans prepared by Tooker & Marsh, architects, 101 Park avenue, New York, for a high school, including manual training department. School estimated to cost about $500,000.

JAMESTOWN, N. Y. — Jamestown Metal Equipment Co. has purchased all the capital stock of the Blackstone Mfg. Co., producers of washing machines, and will operate its plant.

NEW YORK—Semet-Solvay Co., 61 Broadway, is planning to erect a plant at either Baton Rouge, La., or Freeport, Tex.

NEW YORK—Harlem Metal Corp., 592-598 East 133rd street, has leased waterfront property on the east side of the Harlem river, south of 144th street, Bronx, New York, for a scrap yard.

NEW YORK—Standard Oil Co. of New York, 26 Broadway, is having plans made for extensive extensions and improvements at its refinery at Buffalo, including a new still, at cost of more than $80,000.

NEW YORK—Peerless Doll Mould & Machine Corp. has been formed by Benjamin Unger, 165 East Eighty-sixth street, and associates, to manufacture metal molds and other mechanical equipment.

NEW YORK—Joseph D. McGoldrick, controller, has made application for PWA loan of $1,867,300 for sewage treatment works, the first step in the development of a general plan for sewage disposal worked out by the department of sanitation.

SYRACUSE, N. Y.—M. J. Vincent & Sons Coal Co., 115 East Genesee street, will build a new battery of coal bins,

with elevating, conveying and loading equipment.

TROY, N. Y.—Rensselaer Polytechnic Institute has obtained a fund of $400,000 and will build a 4-story aeronautical laboratory 65 x 185 feet, equipped to build and test aircraft.

### New England

EAST MILTON, MASS.—Selectmen have plans in preparation for a manual training shop in a new high school for which a fund of $400,000 has been provided. Ralph H. Doane, 60 Batterymarch street, Boston, is architect.

HINGHAM, MASS.—Selectmen plan a manual training department in a new junior high school which is to cost over $200,000. Cram & Ferguson, 248 Boylston street, Boston, are architects.

ROCKLAND, MASS. — Rockland Welding & Engineering Co. has leased a plant on Webster street and will equip it for a welding and machine shop. Carl Anderson is proprietor.

SPRINGFIELD, MASS. — Sanidip Mfg. Corp. has been formed to manufacture special machinery and parts, by Everett M. Sime, 116 Denver street, and associates.

### Pennsylvania

EAST CARNEGIE, PA.—Fire in the one-story building of the Union Electric Steel Co. here June 6 caused $4000 damage.

FLEETWOOD, PA.—Special election has authorized expenditure of $110,000 for a municipal electric light and power plant.

HARRISBURG, PA.—Commonwealth of Pennsylvania, secretary of property and supplies, Capitol building, will receive bids until June 27 for construction of garage, 60 x 164 feet, with basement, including boiler room, at Mercer, Pa.

JOHNSONBURG, PA. — Johnsonburg Radio Corp. will increase its capital from $250,000 to $925,000 to care for expansion of its plant and facilities, including a 2-story addition, new machine shop and equipment.

NORTHAMPTON, PA.—Northampton Brewery Corp. plans extensons and improvements to its brewery, including electric power equipment, at total cost of about $450,000.

PHILADELPHIA—F. J. Stokes Machine Co., East Tabor road, manufacturer of chemical and processing machinery, will build a machine shop to cost about $25,000. General contract has been given Robert E. Lamb Co., 843 North Nineteenth street.

WASHINGTON, PA.—Coal washer, tipple and power house of the Cokeburg, Pa., mine of the Bethlehem Steel Co., 12 miles east of Washington, was destroyed by fire June 1.

### New Jersey

CAMDEN, N. J.—Eugene S. Powers & Horace B. Nicholson Inc. has been formed to operate a brass and bronze foundry and to manufacture tools, Wilfred B. Woolcott, West Jersey Trust building, Camden, N. J., is representative.

ELIZABETH, N. J.—Elizabeth Brewing Co., 600 Pearl street, plans a boiler and power plant to cost about $50,000. Schwarz Laboratories Inc., 202 East Forty-fourth street, New York, is engineer.

NEWARK, N. J.—Pabst Engineering Equipment Co. Inc. has been formed to operate a foundry. Henry Hershoff, 1060 Broadway, Newark, N. J., is agent.

### Ohio

CLEVELAND—W. E. Root Co., 2914 Prospect avenue, manufacturer of patterns, suffered loss estimated at $3200 by fire, principally to patternmaking machinery.

CLEVELAND—Morgan Steel Products Inc., 6616 Morgan street, recently formed by James Morgan, president and general manager, has leased space from the Grabler Mfg. Co. at the above address and is equipping to manufacture conveyors and other metal products. Production is expected to start about June 25 with 75 employes.

TOLEDO, O.—Electric Auto Lite Co., Champlain and Mulberry streets, plans to repair its plant, damaged by strike and fire, at about $150,000.

WARREN, O.—High voltage switches caused a fire in the plant of the American Welding & Mfg. Co. recently.

### Michigan

BENTON HARBOR, MICH. — Joel Pearson, general contractor, is taking figures on separate trades for a $90,000 addition to the plant of the Benton Harbor Brewing Co.

DEARBORN, MICH.—City clerk is taking bids until June 26 for an addition to the municipal sewerage plant, to cost about $120,000.

DETROIT—H. W. Rickel Co., 1824 Adelaide street, is planning to build an addition to its malt plant.

DETROIT — Modern Pattern Works Inc. has been formed to conduct a patternmaking business, by J. Albert Schaldenbrand, 2934 Cadillac avenue.

DETROIT—Hughes Metal Specialties Co., rear 807 Mack avenue, has been organized to manufacture and repair tools, by William Hughes, 3905 Haverhille avenue.

DETROIT—Century Weather Strip Corp., 1591 Highland avenue, has been formed to deal in weather strip equipment, by Max Greenberg, 2719 Leslie avenue.

DETROIT—Midland Steel Products Co., 6660 Mt. Elliott avenue, has bought a tract with 500 feet frontage on Mt. Elliott avenue from the Packard Motor Car Co. It is planned to build a plant on the site.

DETROIT — Therm-O-Lectric Corp., 3300 Fifteenth street, has been incorporated with $24,000 capital to manufacture electric devices, by Joseph A. Lombard, 852 Delaware avenue, Detroit.

DETROIT—Briggs Mfg. Co. is having plans drawn by Giffels & Vallet, engineers, 606 Marquette building, for an addition to its plant on Mack avenue, Detroit.

DETROIT—Ekhardt & Becker Brew-


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# The Penton Publishing Co.

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ing Co., Orleans and Windsor streets, is building a 6-story addition to cost $100,000, including electric power equipment. Paul Tilds, 2539 Woodward avenue, is architect.

DETROIT—Vacuum Controlled Carburetor Co. has been incorporated with $20,000 capital to manufacture carburetors, by Sid A. Erwin, 1220 Free Press building, Detroit.

GRAND RAPIDS, MICH.—G. C. Dillman, city service director, is taking bids on a 750-horsepower boiler for the municipal pumping plant, to cost about $50,000.

GRAND RAPIDS, MICH.—Modern Brewing Co. is selling stock to finance a new brewing plant it plans to build here. George J. Fuchs, architect, Detroit, is preparing plans for a 4-story brewing plant with capacity of 150,000 barrels a year.

HAMTRAMCK, MICH.—Jenson-McNeill Inc., 2421 Smith avenue, has been incorporated with $10,000 capital to manufacture truck bodies, by J. P. Jensen, 9810 Wisconsin avenue, Detroit.

LANSING, MICH.—Lansing board of water and electric light commissioners will erect a substation building on North Larch street to cost $15,000.

LUDINGTON, MICH.—Rotary Air Cleaner Co. has been incorporated with $10,000 capital to manufacture mechanical devices, by Albin A. Carlson, Ludington, Mich.

MILAN, MICH.—Peter Eddy, Dearborn, Mich., has been given the general contract for a power plant addition and alterations to the federal prison at Milan, Mich.

MT. CLEMENS, MICH. — Anchor Dredging Co., 23 Cass avenue, has been formed to do a dredging business, with $10,000 capital, by John T. Lungerhausen, 235 Cass avenue, Mt. Clemens, Mich.

NEW HUDSON, MICH.—Vagabond Coach Mfg. Co. has been incorporated with $25,000 capital to manufacture automobile trailers, by Fred C. Burt, New Hudson, Mich.

PLYMOUTH, MICH. — Plymouth Cooperage Corp., recently organized to acquire assets and liabilities of the Wolverine Wood Products Inc., Ann Arbor, Mich., is removing its operations from its present plant in Ann Arbor to that formerly occupied by the Peninsular Metal Products Co. in Plymouth, due to increasing demands for tight cooperage from the brewing distilling and other industries.

WYANDOTTE, MICH.—Marx Brewery is taking bids on a bottling plant addition to double its capacity.

## Indiana

FORT WAYNE, IND.—Process Molds Inc., 1700 North Harrison street, has been formed to engage in general iron moulding business, by Victor V. Miller, Henry J. Bowerfind, Vernon L. Tannehill, Joseph W. Bishop, and James M. Barrett Jr.

SOUTH BEND, IND.—Sibley Machine Co. will build a foundry addition, general contract having been awarded R. Sollitt & Sons, South Bend, Ind. Will cost about $50,000.

## Illinois

CHICAGO—International Harvester Co., 606 South Michigan avenue, is understood to have decided not to act on bids asked on about $900,000 worth of equipment for its various plants. Cancellation of orders, due to drought and other causes, is given as the reason.

DECATUR, ILL.—Power house and laundry of Decatur and Macon County Hospital association recently was damaged by fire.

PEORIA, ILL.—Fort Clark Distilleries Inc., 910 Jefferson building, has been incorporated by Louis H. Schwabacher, Louis H. Schwabacher Jr., and J. Michelson, to engage in manufacturing, distilling, blending and brewing liquors.

WOODSTOCK ILL.—Diggins Engineering Corp., 214 Throop street, has been incorporated with 4955 shares par value to manufacture high-speed railroad equipment, by B. H. Diggins, W. V. Goodner and H. A. Patrick. Charles A. Corey, Woodstock, Ill., is correspondent.

## Alabama

BIRMINGHAM, ALA.—W. M. Smith & Co., dealers in used machinery, iron and steel scrap, etc., have purchased the old government coaling station appurtenances, including more than 300 tons of structural steel, at Key West, Fla., and will ship the salvage to Birmingham.

SELMA, ALA.—McPherson & Foster Co., Evansville, Ind., plans establishing a wire box plant here in the old Chero-Cola Bottling Co.'s plant.

SYLACAUGA, ALA.—Bids will be received by the city July 9 for waterworks improvements, including a 250,000- gallon steel tank. Wiedeman & Singleton, Candler building, Atlanta, Ga., are engineers.

## District of Columbia

WASHINGTON—Veterans administration, L. H. Tripp, director of construction, 764 Arlington building, will receive bids June 28 for water tank and tower for the veterans facility at Canandaigua, N. Y.

WASHINGTON—House of representatives has passed bill authorizing District of Columbia to borrow up to $10,750,000 from PWA, including $8,000,000 for sewage disposal plant in the Blue Plains section of the District of Columba.

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids June 26, schedule, 2766, on two motor-driven double housing planers for delivery at Washington; schedule 2767, ten pneumatic grinders, for delivery at Norfolk, Va.

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids June 29, schedule 2771, for one motor-driven planer and milling machine; schedule 2772, one motor-driven power squaring shear, both for delivery at Washington.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids June 26, schedule 2680, motor-driven centrifugal pumps and spares; schedule 2682, motor-driven air compressors and spares; June 29, schedule 2730, turbine thrust bearings and spare parts, all for delivery at Brooklyn, N. Y., and Charleston, S. C.

## Florida

FERNANDINA, FLA.—Gigis Boat Building & Engine Co. has been incorporated by George Gigis and Paul Gigis.

TAMPA, FLA.—DeSoto Brewing Co. has been incorporated by D. Arias and C. Daubar.

TRENTON, FLA.—City has applied for $40,000 loan for waterworks and sewerage system.

## Kentucky

IRVINGTON, KY.—Town clerk will receive bids June 25 for furnishing all labor and materials for constructing complete waterworks system.

LIBERTY, KY.—City will receive bids June 26 for furnishing materials and constructing complete waterworks system, including filtration and pumping works and intake, supply lines and distribution system, and meters. Howard K. Bell, 732 McClelland building, Lexington, Ky., is consulting engineer.

LOUISVILLE, KY.—Falls City Cooperage Co. has been incorporated with $125,000 capital by Hubert T. Willis and Howard O. Hunn to conduct a woodworking plant.

LOUISVILLE, KY.—Bentwood Products Co., Walter H. Gillette, president, 1590 Parsons place, is planning to rebuild its burned woodworking plant soon.

MIDDLESBORO, KY.—City, Mayor Ginsburg, is planning to build a power plant.

## Maryland

BALTIMORE—J. C. Hanawalt, 3710 Sequoia avenue, has contract for 1-story, 26 x 40-foot building for General Refractories Co., 3401 Seventh avenue.

BALTIMORE—Gold Dust Corp., 5300 Holabird avenue, receives bids June 20 for addition to plant, including kettle building, boiler foundations, dust tower and various alterations. May expend $250,000, of which about $60,000 will be for construction and remainder for equipment, including boilers, etc.

CLEARSPRINGS, MD.—Town will receive new bids for water supply system to cost $23,000. J. B. Ferguson, Hagerstown, Md., engineer.

## Mississippi

LAUREL, MISS.—City may get $100,000 appropriation for waterworks extension.

## North Carolina

ROCKY MOUNT, N. C.—City, M. D. Munn, mayor, will receive bids June 14 for furnishing materials and constructing an elevated steel water tank on steel tower for waterworks system.

SHELBY, N. C.—Chamber of commerce is investigating possibility of erecting city-owned power plant.

## South Carolina

CHARLESTON, S. C. — Charleston Dry Dock & Machine Co. has contract for a 5000-barrel oil tanker for Thurber & Powers, Boston, including two 200-horsepower diesel engines and a 60-horsepower centrifugal pump.

COLUMBIA, S. C.—Gedney Co., St. Petersburg, Fla., is low bidder at $66,000

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for construction of sewer system in eastern section of city. Total cost of project $812,000.

GREENVILLE, S. C.—Fiske-Carter Construction Co. has contract for power house at Camperdown Mills, 20 x 40 feet, one-story.

### Tennessee

CHATTANOOGA, TENN. — Edison General Electric Appliance Co. Inc., subsidiary of General Electric Co., Schenectady, N. Y., plans establishing plant in Chattanooga for production of both Hotpoint and TVA model electric water heaters. Boilers for the heaters are to be made by Hedges-Walsh-Weidner Co., 1032 West Main street.

YALE, TENN.—St. Louis & San Francisco railroad, headquarters at St. Louis, has plans for a 1-story shop building 40 x 100 feet at Yale, Tenn.

### West Virginia

WAYNE, W. VA.—Paris Adkins, clerk, will receive bids July 10 for constructing rapid sand filtration plant, improvements to water system and necessary appurtenances. J. Paul Blundon, Keyser, W. Va., engineer.

### Virginia

MARTINSVILLE, VA.—Election will be held June 28 on $100,000 in bonds for water and sewage disposal improvements.

### Missouri

BROOKFIELD, MO.—Bids will be received until June 20 for a complete sewage disposal plant, about $60,000. W. B. Rollins & Co., 339 Railway Exchange building, Kansas City, Mo., are engineers.

HORNERSVILLE, MO.—City, W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, engineer, receives bids June 22 for furnishing and constructing waterworks systems, including pumping equipment and water tower.

KANSAS CITY, MO.—Excel Auto Radiator Co., 1825 South Michigan avenue, Chicago, has completed arrangements for enlarging its Kansas City plant, closing a lease on larger quarters at 2416 Broadway. Additional equipment will be installed and production capacity will be stepped up to about 200 radiators daily.

ST. LOUIS—Knapp-Monarch Co., Belleville, Ill., has leased a building on Bent avenue and Potomac street for manufacture of electrical appliances, and will move plant from Belleville.

### Oklahoma

GUYMON, OKLA.—R. L. Jackson and associates are planning to construct a carbon black plant.

### Texas

BEAUMONT, TEX.—Burrus Lumber Co. is planning to rebuild its burned mill, and will install an 8-foot band saw mill.

BEAUMONT, TEX.—F. C. Dezendorf, city port director, is negotiating with the Solvay Process Co., 61 Broadway, New York, for establishment of a chemical plant here.

FAIRFIELD, TEX.—City, H. L. Williford, mayor, will ask bids soon for water works improvements, including a 75,000 to 100,000-gallon steel tank, pumps and accessories, to cost about $75,000. H. B. McAllister, 714 North Eleventh street, Waco, Tex., is engineer.

FARMERSVILLE, TEX.—City receives bids July 6 for waterworks improvements, including construction of pumping plant and installation of 500-gallon-per-minute pump and motor. Myers, Noyes & Forrest, 2203-9 Tower Petroleum building, Dallas, Tex., engineers. Loan for $41,000 and grant for $10,000 have been approved by PWA.

HOUSTON, TEX. — Universal Gas Generator Co. of Texas has been incorporated with $1200 capital to manufacture gas generating equipment, by L. L. Barnes and associates.

### Wisconsin

MADISON, WIS.—Madison Plow Co., 131 Fair Oaks avenue, J. Reuter, president, plans to rebuild its plow factory and warehouse, recently burned, at cost of $75,000.

MENASHA, WIS.—Menasha Brewing Co., recently organized by E. W. Forkin and associates, has taken over a former brewing plant and will remodel and install complete new equipment.

MILWAUKEE — Air Conditioning Equipment Co., 1317 North Third street, is moving to larger quarters at 257 East Keefe avenue and will install new equipment for manufacturing residence and industrial air conditioners. R. C. Jepertinger is vice president and general manager.

### Colorado

CANON CITY, COLO.—State is starting erection of new plant to be used for making automobile license plates at the penitentiary here. About $25,000 worth of machinery will be purchased. The old mill recently was destroyed by fire.

COLORADO SPRINGS, COLO.—Golden Cycle Mill's new power plant, being erected at Pike View mine, is now well under way. The foundations are in and machinery is being installed. Transmission line is being built and the plant will be completed by late August.

DENVER—Continental Can Co., 1 Pershing Square, New York, has purchased site and two buildings at 235 South Cherokee street, Denver, for manufacturing cans. Previously the company conducted operations in Denver on leased premises.

### Minnesota

BEMIDJI, MINN.—City council, Belle Denley, city clerk, will receive bids until June 21 for a sewage disposal plant, including sewage lift, pipe line and complete sewage treatment plant. Pillsbury Engineering Co., 1200 Second avenue South, Minneapolis, is engineer.

BLUE EARTH, MINN.—Minnesota Valley Canning Co., Le Sueur, Minn., is making improvements to its canning plant here, including installation of a new conveyor and other equipment. H. C. Gerlach & Son, 414 North Fourth street, Mankato, Minn., are architects.

LAKE CITY, MINN.—City council, H. V. Fick, city clerk, will take bids soon for construction of a sewage disposal plant, including sewage treatment equipment, sewage lift station, outlet sewer and water main. Ealy G. Briggs, 1520 Hythe street, St. Paul, is engineer.

SARTELL, MINN.—Watab Pulp & Paper Co. has started improvements to its papermill and power plant, to cost about $240,000, including installation of a 1500-kilowatt steam turbine and high-pressure boiler.

ST. PAUL—Theo. Hamm Brewing Co., 681 East Minnehaha street, is making improvements to its malt house and plans are being made for a 2-story keg house. C. H. Johnston, 360 Robert street, is architect.

SOUTH ST. PAUL, MINN.—Cudahy Packing Co. plans construction of an addition to its packing plant.

WATERTOWN, MINN. — Village council, G. W. Millford, village clerk, will receive bids until June 22 for a sewage treatment plant. Druar & Milinowski, 830 Globe building, St. Paul, are engineers.

### Iowa

MASON CITY, IOWA—Chicago & North Western railroad, 226 West Jackson boulevard, Chicago, plans to rebuild its tool shop recently destroyed by fire which ruined much equipment.

NEWTON, IOWA—Kuickon Mfg. Co., Des Moines, Iowa, manufacturer of shackle clamps, grease guns and other automotive accessories, plans to open a plant at Newton, Iowa, shortly. P. D. Kilbury, of Newton, is interested.

VINTON, IOWA—State board of education, W. H. Gemmill, secretary, Des Moines, Iowa, plans to buy a 90-kilowatt steam-driven electric generator for the power plant at Iowa school for the deaf, O. L. McIntyre is superintendent of the school.

### Nebraska

SCOTTSBLUFF, NEB.—Garage and machine shop of Sam Kimbrel, 210 East Overland, recently was destroyed by fire.

### Pacific Coast

SEATTLE—Master Oil Burner Co., 805 Dexter avenue, plans a foundry addition to cost about $50,000.

SEATTLE—N. & S. Foundry Co., 1140 Elliott avenue West, is enlarging its plant and constructing a pattern shop.

SEATTLE—Arctic Mines Inc. has been formed with $32,000 capital by M. H. Van Nuys and associates, 7011 Tenth avenue, northeast.

### Dominion of Canada

COPPER CLIFF, ONT.—International Nickel Co. is constructing an addition to its smelter, general contract being in hands of Fraser-Brace Ltd., Montreal, Que., which built the main plant.

KITCHENER, ONT.—Canada Skate Mfg. Co. Ltd. has been incorporated with $80,000 capital to manufacture skates and sport articles.

LINDSAY, ONT.—Castle Motor Co., Ltd. has bought a building at Lindsay and will start at once the manufacture of motor car accessories.

LONDON, ONT.—John Labatt Ltd., brewer, will build an addition to its plant at cost of about $50,000.

MOOSE JAW, SASK.—British American Oil Co. Ltd. plans to extend its refinery at Moose Jaw at cost of $1,000,000 to convert it into a cracking plant for low-grade oil. A 40-mile pipe line is also projected.

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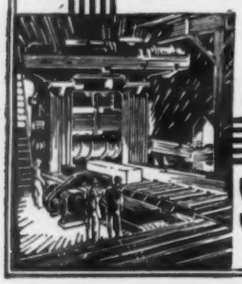

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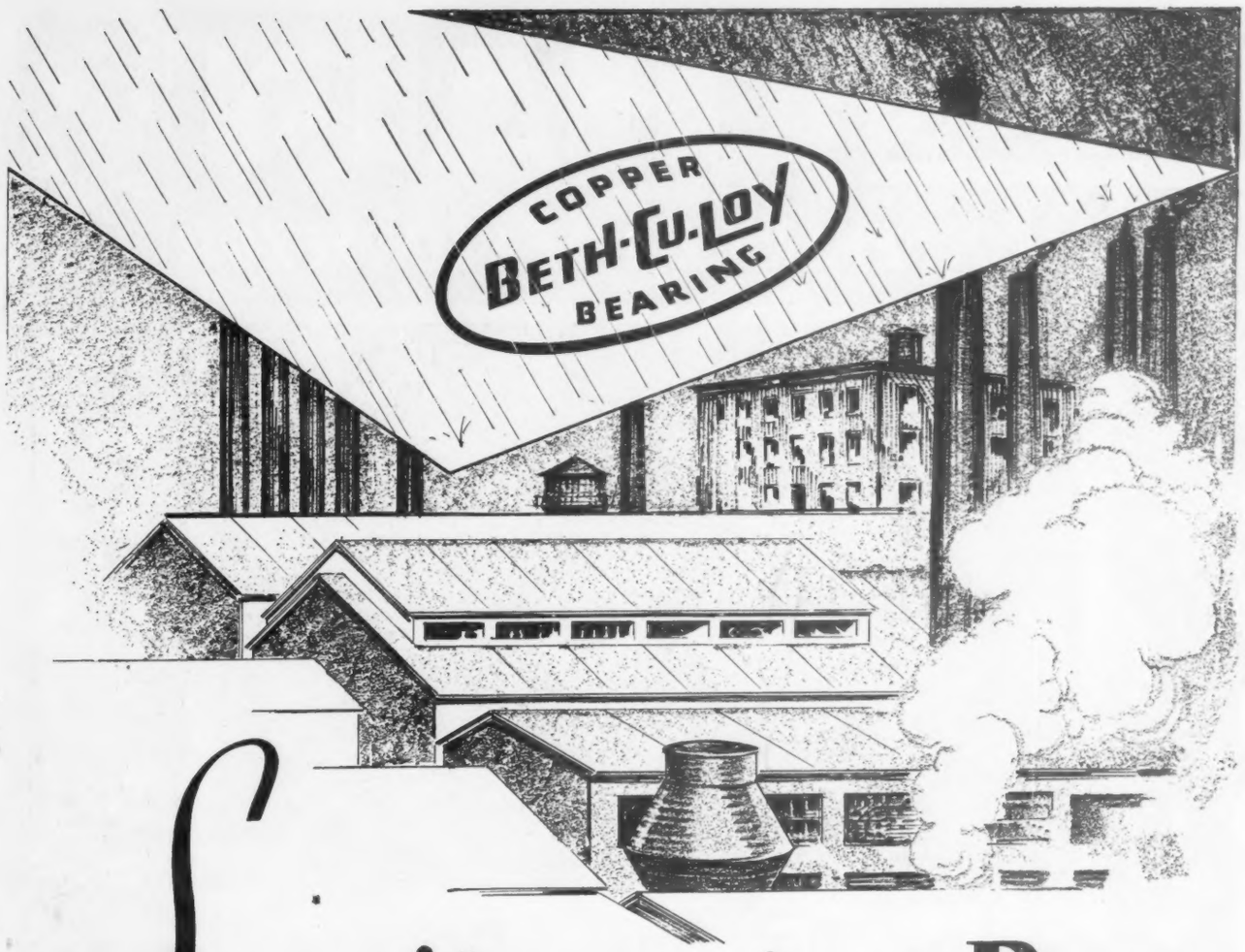


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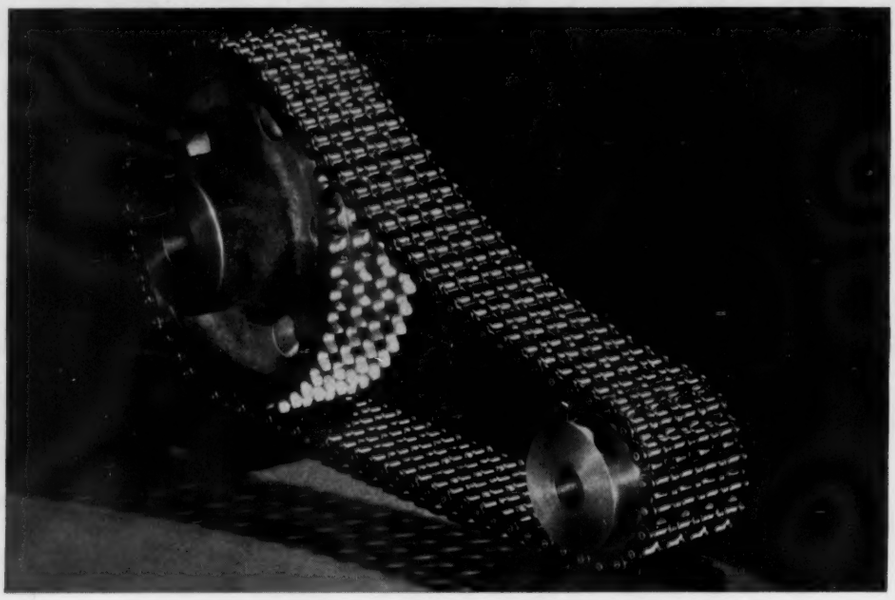

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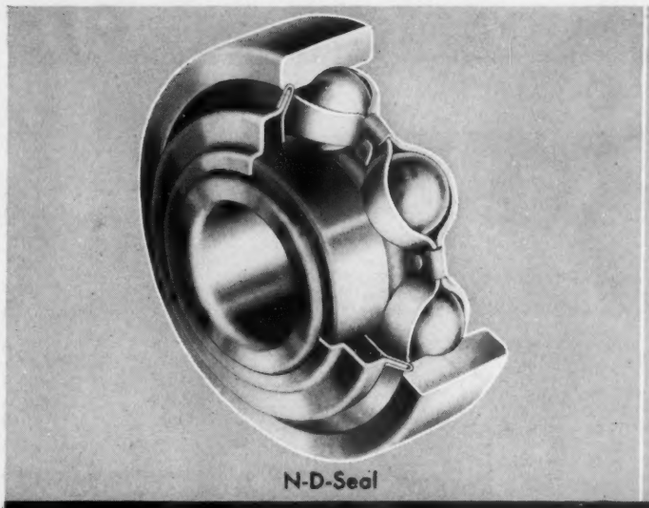

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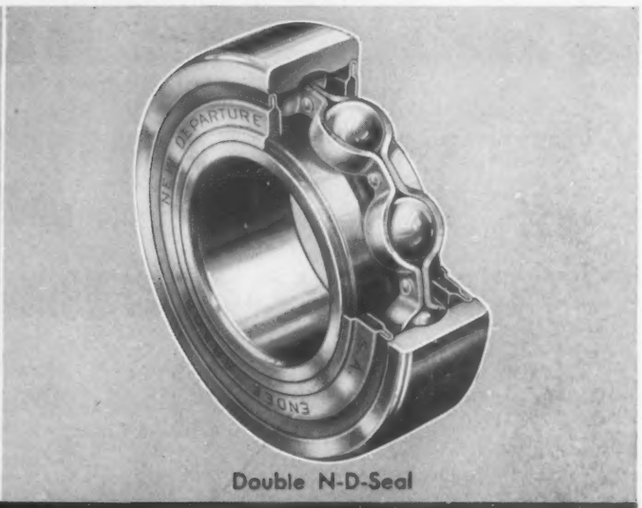


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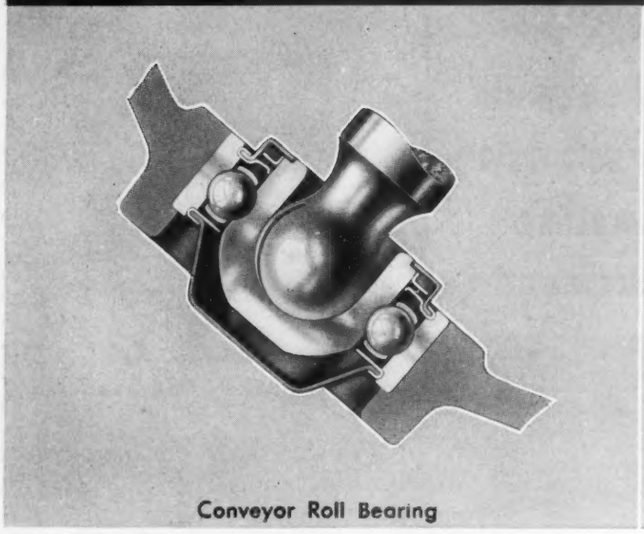

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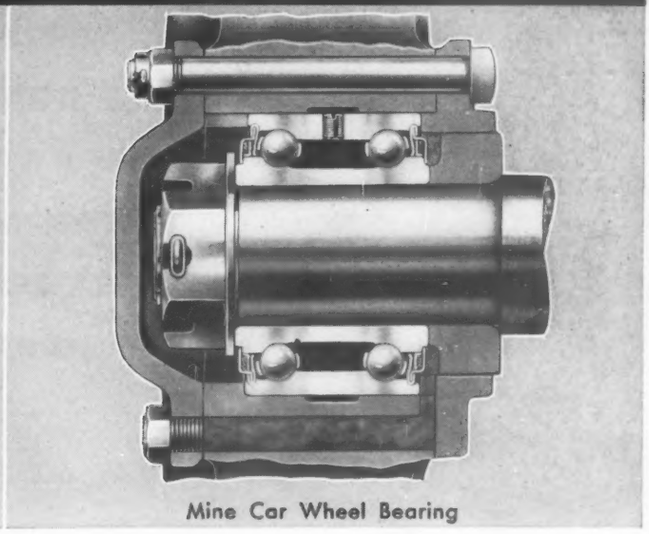

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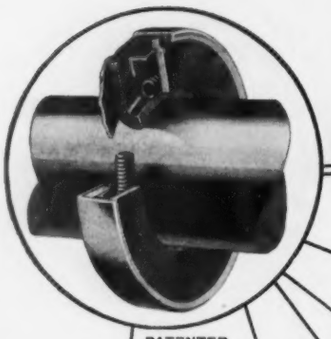

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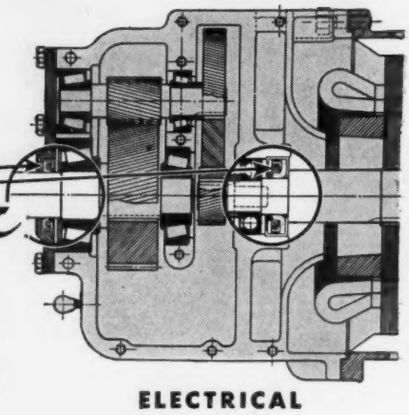

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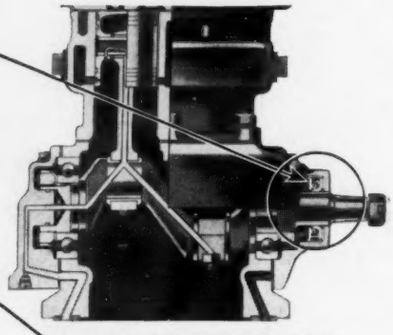
AGRICULTURAL



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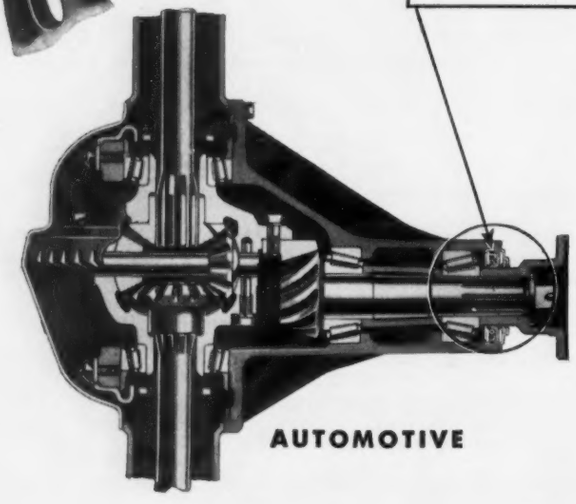

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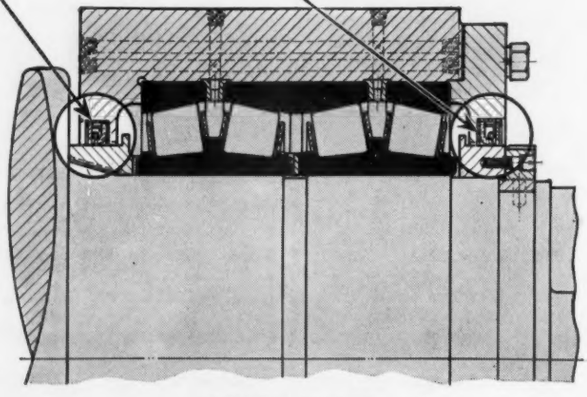

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